SERVICE MANUAL

(DOMESTIC)

IMPINGER CONVEYOR OVENS

MODEL SERIES 1000 - 1200 & 1400

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MODEL 1004 - 120/230 VAC - 60HZ - NATURAL GAS
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MODEL 1200 - 120/230 VAC - 60HZ - NATURAL GAS/DUAL BELT
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MODEL 1204 - 120/230 VAC - 60HZ - NATURAL GAS/DUAL BELT
MODEL 1205 - 120/230 VAC - 60HZ L.P.GAS/DUAL BELT

POWER SUPPLY	Electrical Power to be supplied to the Oven by a four conductor service. . Voltage from the black conductor to the white conductor is 120 VAC. Black conductor is Hot Red conductor is Hot White conductor is Dedicated Neutral Green conductor is Ground
CONTROL BOX AUTO COOL DOWN	When the temperature in the Control Box reaches 120°F ± 3°, the Cooling Fan Thermostat will switch power to the Control Box Cooling Fan. The Thermostat will interrupt power to the Cooling Fan when the Control Box temperature falls to 100°F ± 3°.
MAIN FAN CIRCUIT	Electrical power is permanently supplied to the normally open contacts of the Double Pole Main Fan Relay, the Cooling Fan Thermostat, the normally open Main Fan Switch, and the normally open Cool Down Thermostat (thermostat closes at 160°F and opens at 140°F). Closing the Main Fan Switch energizes the coil of the Relay. The normally open contacts now close, energizing the Main Fan Motor through (2) 10A fuses, and the Cooling Fan. Closing the Fan Switch also supplies power to the Hour Meter (hour meter discontinued after S/N 3484), the 12.6 VAC Transformer, the Burner and Conveyor Switches.
TRANSFORMER (12.6 VAC)	Upon closure of the Fan Switch, 120 VAC is supplied to the primary of the 12.6 VAC Transformer. The Transformer steps the voltage down to 12.6 VAC (normally 13 to 14 VAC) with a center tap, and supplies power to the Time/Temp Display. The voltage from each leg of the Transformer's secondary to the center tap should be one half of the secondary voltage.
BURNER CIRCUIT	Closing the Fan Switch and the normally open Burner Switch supplies 120 VAC through the Air Pressure Switch, to the normally open contacts of the Burner Motor Relay, and the primary of the 24 VAC Step Down Transformer. The Transformer secondary supplies 24 VAC (through a 1A fuse on Model 1004 and 1005) to the Relay Coil (the normally open contacts close within 30 seconds), and the normally open Centrifugal Switch. When the Relay contacts close, the Burner Blower Motor is energized. As this motor reaches approximately1600 R.P.M., its internal centrifugal switch closes, supplying 24 VAC to the Gas Control Valve. When the Gas Control Valve is supplied with 24 VAC the pilot valve is energized, and the ignitor circuit is energized. Ignition should now occur. After pilot flame is proven, the main gas valve is energized. The Burner Indicator Light is also energized.
CONVEYOR DRIVE(S/N 100 to 4389)	Closing the Fan Switch and the normally open Conveyor Switch supplies 120 VAC through a 3A Fuse, to the Motor Control Board. AC volts are converted to D.C. volts and are supplied to the Conveyor motor at board terminals A1 and A2 through a D.P.D.T. Reversing Switch. Adjustment of the Speed Control Potentiometer (500 ohm, 10 turn) will change resistance at terminals S1, S2, and S3 varying the D.C. voltage to the motor. The speed of the Conveyor Motor will increase or decrease as the D.C. voltage from the Motor Control Board increases or decreases respectively.
(S/N 4390 and UP)	Closing the fan switch and the normally open conveyor switch supplies 120 VAC to the Motor Control Board. AC volts are converted to DC volts and are supplied to the Conveyor Motor at terminals A+ and A-. Adjustment of the Speed Control Potentiometer (5,000 ohm 10 turn) will change resistance at terminals P1, P2, and P3 varying the DC voltage to the motor. The speed of the conveyor motor will increase or decrease as the DC voltage from the board increases or decreases respectively. As the motor turns, it drives both the reducer gearbox and the tach.

	generator. The tach. generator is a DC voltage generator which supplies a voltage to the DC motor control board and is used as a reference for maintaining a constant conveyor speed.
NOTE	The 1200 Series Ovens utilize 2 complete conveyor drive systems.
TIME TEMP DISPLAY	The Time/Temp. Display is energized when the Fan Switch is closed, supplying120 VAC to the primary of the 12.6 volt Transformer The secondary output of the transformer, normally 13 to 14 VAC (depending on input), with a center tap is supplied at terminals 1,2, and 3 of the Time/Temp. Display. The center tap is terminal 2. The display works on a balanced input and center tap voltage to each leg must be 1/2 the total reading. The speed side of the Time/Temp. Display uses a slotted disc (cemented to tach. coupling) to break the infra-red light beam of the optical switch (mounted on gear motor) producing electrical pulses that are transmitted to the display. The display converts these pulses into a read-out of minutes and seconds. The temperature portion of the display uses a Thermistor Probe to sense oven temperature. The thermistor outputs a resistance proportional to the oven temperature. This resistance is then converted by the display into a temperature reading. **NOTE:** The 1200 Series Ovens use a Double Pole Double Throw Switch to connect the two Optical Encoder Assemblies to the Time/Temp Display. By activating the switch, either the front or rear belt speed can be shown by the Time/Temp Display.

SEQUENCE OF OPERATIONS 1022 / 1023 / 1202 / 1203

MODEL 1022 - 120/208 VAC - 3 PHASE
MODEL 1023 - 120/240 VAC - 3 PHASE
MODEL 1202 - 120/208 VAC - 3 PHASE - DUAL BELT
MODEL 1203 - 120/240 VAC - 3 PHASE - DUAL BELT

POWER SUPPLY	Electrical Power to be supplied to the Oven by a five conductor service. Voltage from the black conductor to the white conductor is 120 VAC. Black conductor is Hot Red conductor is Hot Orange conductor is Hot White conductor is Dedicated Neutral Green conductor is Ground
MAIN FAN CIRCUIT	Electrical power is permanently supplied through 6, 50A fuses to the normally open contacts of the Mercury Contactors. Power is also supplied through 2, 15A fuses to the normally open contacts of the Double Pole Main Fan Relay, the Double Pole Main Fan Switch, and the normally open Cool-Down Thermostat (thermostat closes at 160°F and opens at 140°F.) Closing the Main Fan Switch energizes the coil of the Main Fan Relay. The normally open contacts now close, energizing the Main Fan Motor, and the Control Box Cooling Fan. Closing the Fan Switch also supplies power to the Hour Meter (hour meter discontinued after S/N 3484), the 12.6 VAC Transformer, the Heat and Conveyor Switches.
TRANSFORMER (12.6 VAC)	Upon closure of the Fan Switch, 120 VAC is supplied to the primary of the 12.6 VAC Transformer. The Transformer steps the voltage down to 12.6 VAC (normally 13 to 14 VAC) with a center tap, and supplies power to the Time/Temp Display. The voltage from each leg of the Transformer's secondary to the center tap should be one half of the secondary voltage.
HEAT CIRCUIT	Closing the Fan Switch and the normally open Heat Switch supplies 120 VAC through the Air Pressure Switch and the normally closed Hi-Limit Thermostat (manually re-settable, opens at 190°F) the 3A Fuse, to the L1 terminal of the Temperature Control Board, the coils of the Mercury Contactors, and to the Heat Indicator Light.
TEMPERATURE CONTROL	When the Heat Switch is closed, 120 VAC is supplied to the Temperature Control. The Temperature Control Potentiometer (2.5K ohm) is adjusted to desired temperature. The Thermocouple will provide varying millivolts to the Temperature Controller. The Temperature Controller switches the L2 line of the Contactor coils at intermittent intervals to maintain desired temperature.

CONVEYOR DRIVE (S/N 100 to 4389)	Closing the Fan Switch and the normally open Conveyor Switch supplies 120 VAC through a 3A Fuse, to the Motor Control Board. AC volts are converted to D.C. volts and are supplied to the Conveyor Motor at board terminals A1 and A2 through a D.P.D.T. Reversing Switch. Adjustment of the Speed Control Potentiometer (500 ohm, 10 turn) will change resistance at terminals S1, S2, and S3 varying the D.C. voltage to the motor. The speed of the Conveyor Motor will increase or decrease as the D.C. voltage from the Motor Control Board increases or decreases respectively.
(S/N 4390 and UP)	Closing the fan switch and the normally open conveyor switch supplies 120 VAC to the Motor Control Board. AC volts are converted to DC volts and are supplied to the Conveyor Motor at terminals A+ and A-. Adjustment of the Speed Control Potentiometer (5,000 ohm 10 turn) will change resistance at terminals P1, P2, and P3 varying the DC voltage to the Conveyor Motor. The speed of the conveyor motor will increase or decrease as the DC voltage from the board increases or decreases respectively. As the motor turns, it drives both the reducer gearbox and the tach. generator. The tach. generator is a DC voltage generator which supplies a voltage to the DC motor control board and is used as a reference for maintaining a constant conveyor speed.
NOTE*	The 1200 Series Ovens utilize 2 complete conveyor drive systems.
TIME/TEMP DISPLAY	The Time/Temp Display is energized when the Fan Switch is closed, supplying 120 VAC to the primary of the12.6 volt Transformer. The secondary output of the transformer, normally 13 to 14 VAC (depending on input), with a center tap is supplied to terminals 1,2, and 3 of the Time/Temp Display. The center tap is terminal 2. The display works on a balanced input and center tap voltage to each leg must be 1/2 the total reading. The speed side of the Time/Temp. Display uses a slotted disc (cemented to tach. coupling) to break the infra-red light beam of the optical switch (mounted on gear motor) producing electrical pulses that are transmitted to the display. The display converts these pulses into a read-out of minutes and seconds. The temperature portion of the display uses a Thermistor Probe to sense oven temperature. The thermistor outputs a resistance proportional to the oven temperature. This resistance is then converted by the display into a temperature reading.
NOTE*	The 1200 Series Ovens use a Double Pole Double Throw Switch to connect the two Optical Encoder Assemblies to the Time/Temp. Display. By activating the switch, either the front or rear belt speed can be shown by the Time/Temp. Display.

SEQUENCE OF OPERATIONS 1040 / 1041 / 1240 / 1241

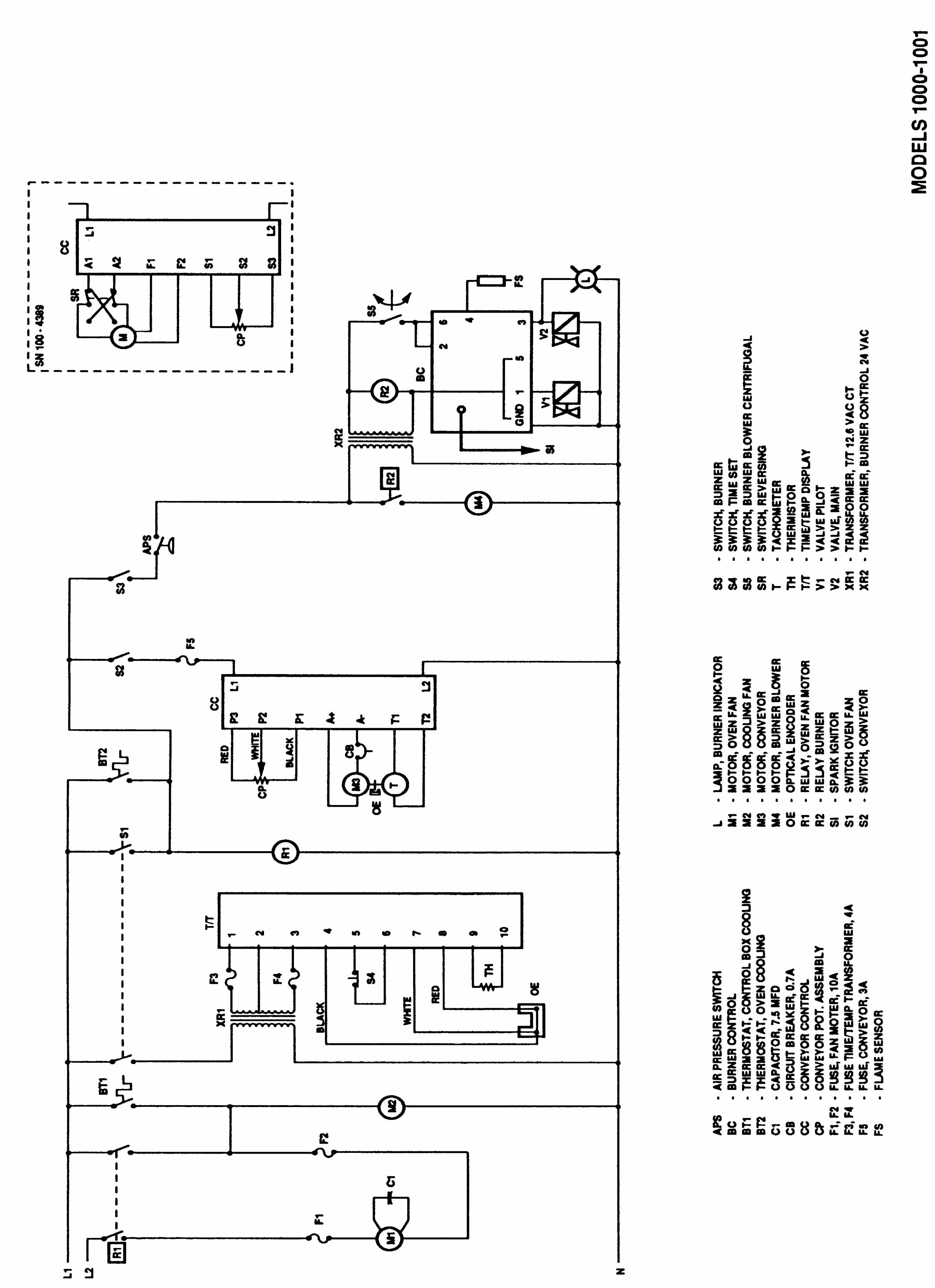
MODEL 1040 - 120/230 VAC - 60HZ - NATURAL GAS
MODEL 1041 - 120/230 VAC - 60HZ - L.P. GAS
MODEL 1240 - 120/230 VAC - 60HZ - NATURAL GAS/DUAL BELT
MODEL 1241 - 120/230 VAC - 60HZ - L.P. GAS/DUAL BELT

POWER SUPPLY	Electrical Power to be supplied to the Oven by a four conductor service. Voltage from the black conductor to the white conductor is 120 VAC. Black conductor is Hot Red conductor is Hot White conductor is Dedicated Neutral Green conductor is Ground
CONTROL BOX AUTO COOL DOWN	When the temperature in the Control Box reaches 120°F ± 3°, the Cooling Fan Thermostat will switch power to the Control Box Cooling Fan. The Thermostat will interrupt power to the Cooling Fan when the Control Box temperature falls to 100°F ± 3°.
MAIN FAN CIRCUIT	Electrical power is permanently supplied to the normally open contacts of the Double Pole Main Fan Relay, the Cooling Fan Thermostat, the normally open Main Fan Switch, and the normally open Cool Down Thermostat (thermostat closes at 160°F and opens at 140°F). Closing the Main Fan Switch energizes the coil of the Relay. The normally open contacts now close, energizing the Main Fan Motor through two 10A fuses, and the Cooling Fan. Closing the Fan Switch also supplies power to the 12.6 VAC Transformer, the Burner and Conveyor Switches.

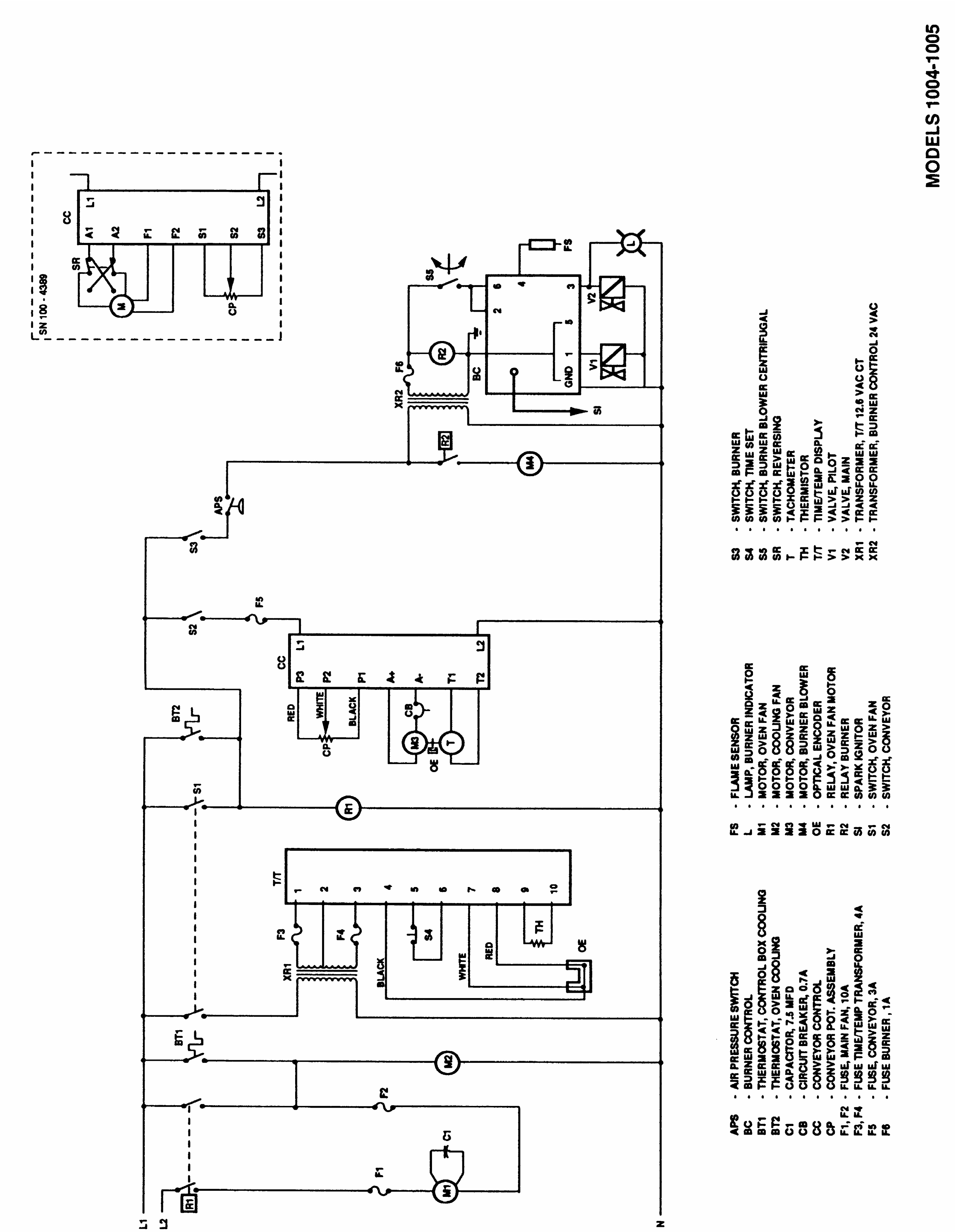
TRANSFORMER (12.6 VAC)	Upon closure of the Fan Switch, 120 VAC is supplied to the primary of the 12.6 VAC Transformer. The Transformer steps the voltage down to 12.6 VAC (normally 13 to 14 VAC) with a center tap, and supplies power to the Time/ Temp. Display. The voltage from each leg of the Transformer's secondary to the center tap should be one half of the secondary voltage.
BURNER CIRCUIT	Closing the Fan Switch and the normally open Burner Switch supplies 120 VAC through the Air Pressure Switch, to the Temperature Control Board, the normally open contacts of the Burner Motor Relay (Burner Motor Relay discontinued after S/N 14791) and the primary of the 24 VAC Transformer. The transformer's secondary supplies 24 VAC to the burner motor relay coil (the normally open contacts close within 30 seconds), and the normally open Centrifugal Switch. When the relay contacts close, the Burner Blower Motor is energized. As this motor reaches approx. 1,600 R.P.M its internal centrifugal switch closes, supplying 24 VAC to the Gas Control Valve. When the Gas Control Valve is supplied with 24 VAC, the pilot valve is energized, and the igniter circuit is energized. Ignition should now occur. After pilot flame is proven, the Main Gas Valve is energized. The Burner Indicator Light is also energized.
TEMPERATURE CONTROL	Closing the Fan Switch and Burner Switch supplies 120 VAC to the Temperature Control Board. The 1K or 1000 ohm Temperature Potentiometer is adjusted to desired temperature. The Thermocouple will provide varying millivolts to the Temperature Controller. The Temperature Controller supplies 120 VAC to the Solenoid Valve at intermittent intervals to maintain desired temperature.
CONVEYOR DRIVE (S/N Q14790 & Below, 1200 series S/N Q14973 & Below 1000 series) (S/N Q14791 & Above, 1200 series refer to Pg. 5 & 6 S/N Q14974 & Above, 1000 series refer to Pg. 5 & 6 (STEPPER)	Closing the fan switch and the normally open conveyor Switch supplies 120 VAC to the Motor Control Board. AC volts are converted to DC volts and are supplied to the Conveyor Motor, at terminals A+ and A-. Adjustment of the Speed Control Potentiometer (5,000 ohm 10 turn) will change resistance at terminals P1, P2, and P3 varying the DC voltage to the Conveyor Motor. The speed of the conveyor motor will increase or decrease as the DC voltage from the board increases or decreases respectively. As the motor turns, it drives both the reducer gearbox and the tach. generator. The tach. Generator is a DC voltage generator, which supplies a voltage to the DC motor control board and is used as a reference for maintaining a constant conveyor speed.
NOTE:	The 1200 Series Ovens utilize 2 complete conveyor drive systems.
TIME/TEMP DISPLAY(S/N Q14790 & Below, 1200 series S/N Q14973 & Below 1000 series) (S/N Q14791 & Above, 1200 series refer to Pg. 5 & 6 S/N Q14974 & Above, 1000 series refer to Pg. 5 & 6 (STEPPER)	The Time/Temp. Display is energized when the Fan Switch is closed, supplying 120 VAC to the primary of the12.6 volt Transformer. The secondary output of the transformer, normally 13 to 14 VAC (depending on input), with a center tap, is supplied to terminals 1,2, and 3 of the Time/Temp. Display. The center tap is terminal 2. The display works on a balanced input and center tap voltage to each leg must be 1/2 the total reading. The speed side of the Time/Temp. Display uses a slotted disc (cemented to tach. coupling) to break the infrared light beam of the optical switch (mounted on gear motor) producing electrical pulses that are transmitted to the display. The display converts these pulses into a read-out of minutes and seconds. The temperature portion of the display uses a Thermistor Probe to sense oven temperature. The thermistor outputs a resistance proportional to the oven temperature. This resistance is then converted by the display into a temperature reading.
NOTE*	The 1200 Series Ovens use a Double Pole Double Throw Switch to connect the two Optical Encoder Assemblies to the Time/Temp. Display. By activating the switch, either the front or rear belt speed can be shown by the Time/Temp Display .
CONVEYOR DRIVE	Closing the Oven Fan Switch supplies 120 VAC, through the Power Transformer, to the normally open Conveyor Switch. Closing the Conveyor Switch supplies 120 VAC, through a 3 AMP Fuse, to the primary of the Conveyor Control Transformer. The secondary of this Transformer supplies 10 VAC and 29 VAC to the Conveyor Control. The conveyor control supplies voltage pulses to the Conveyor Control. The Conveyor Control Potentiometer varies the frequency of these pulses. The motor speed will increase or decrease, as the frequency of the pulses increase or decrease respectively.

TIME TEMP DISPLAY	Closing the Oven Fan Switch supplies 120 VAC, through the Power Transformer, to the primary of the Time/Temp. Transformer. The secondary output of the Transformers, 12.5to 15 VAC with a center tap, is supplies to terminals 1, 2, and3 of the Time/Temp. Display. The display works on a balanced input, and the center tap voltage to each leg must be 1/2 the total reading.

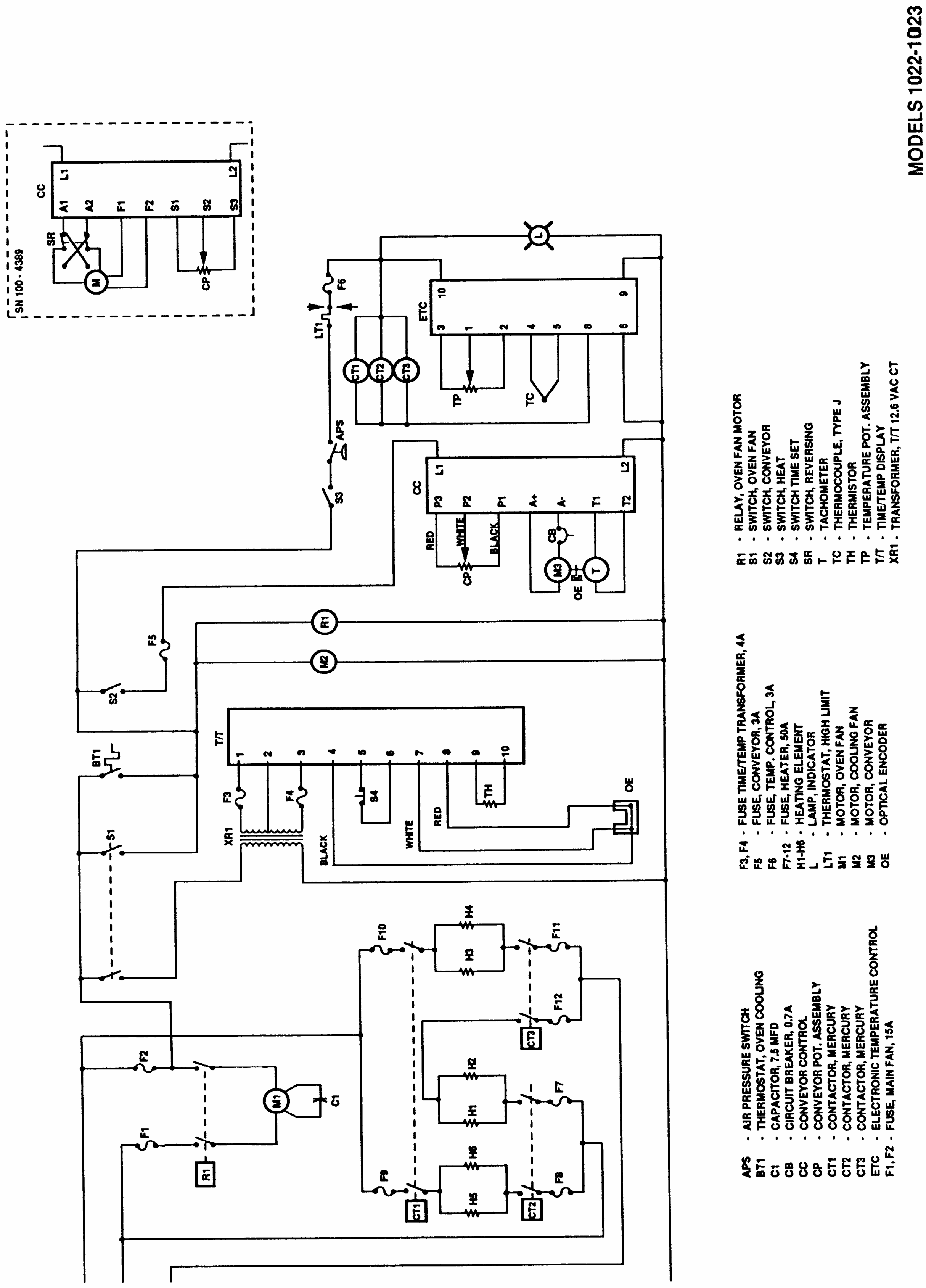
SCHEMATIC / 1000, 1001



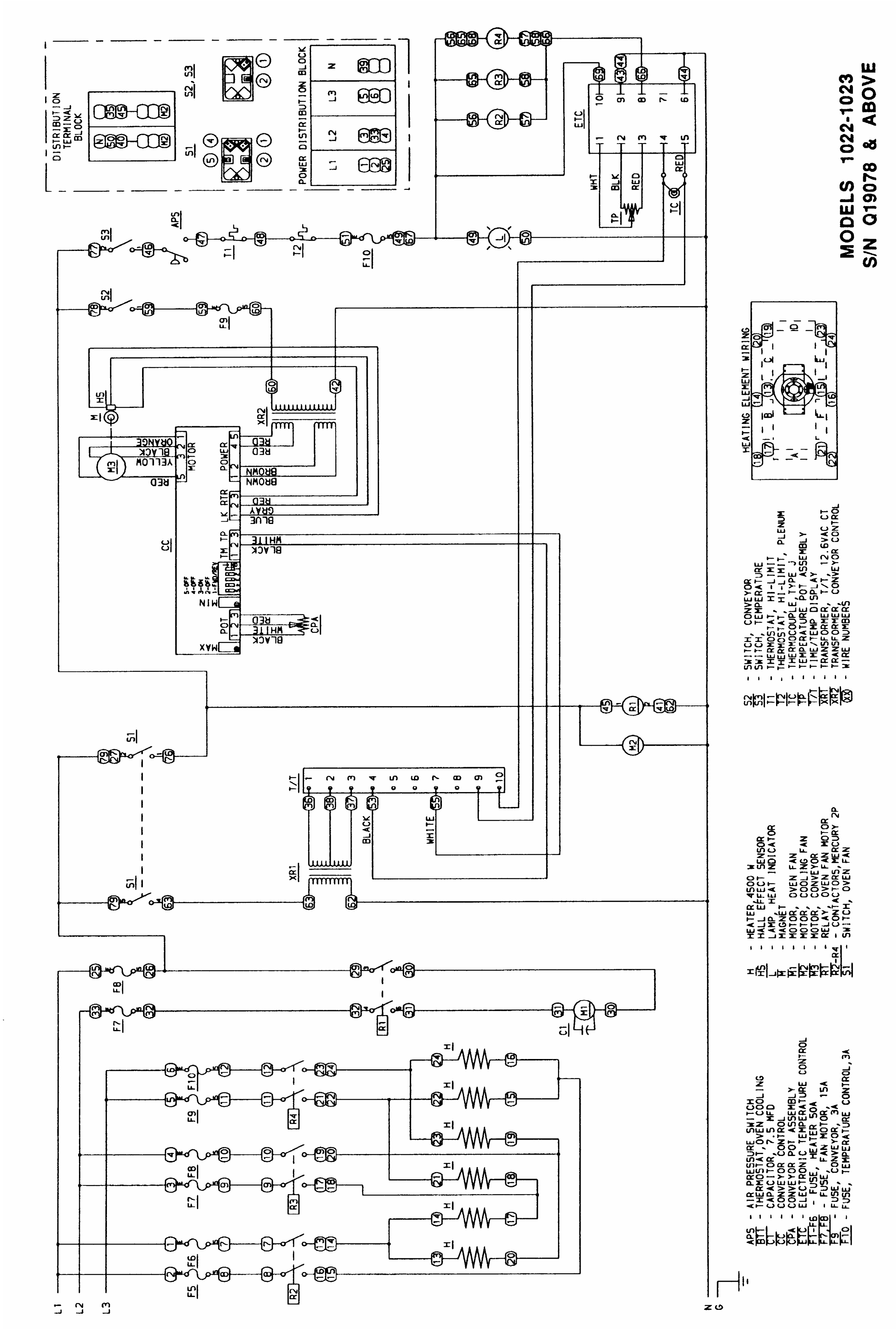
SCHEMATIC / 1004, 1005



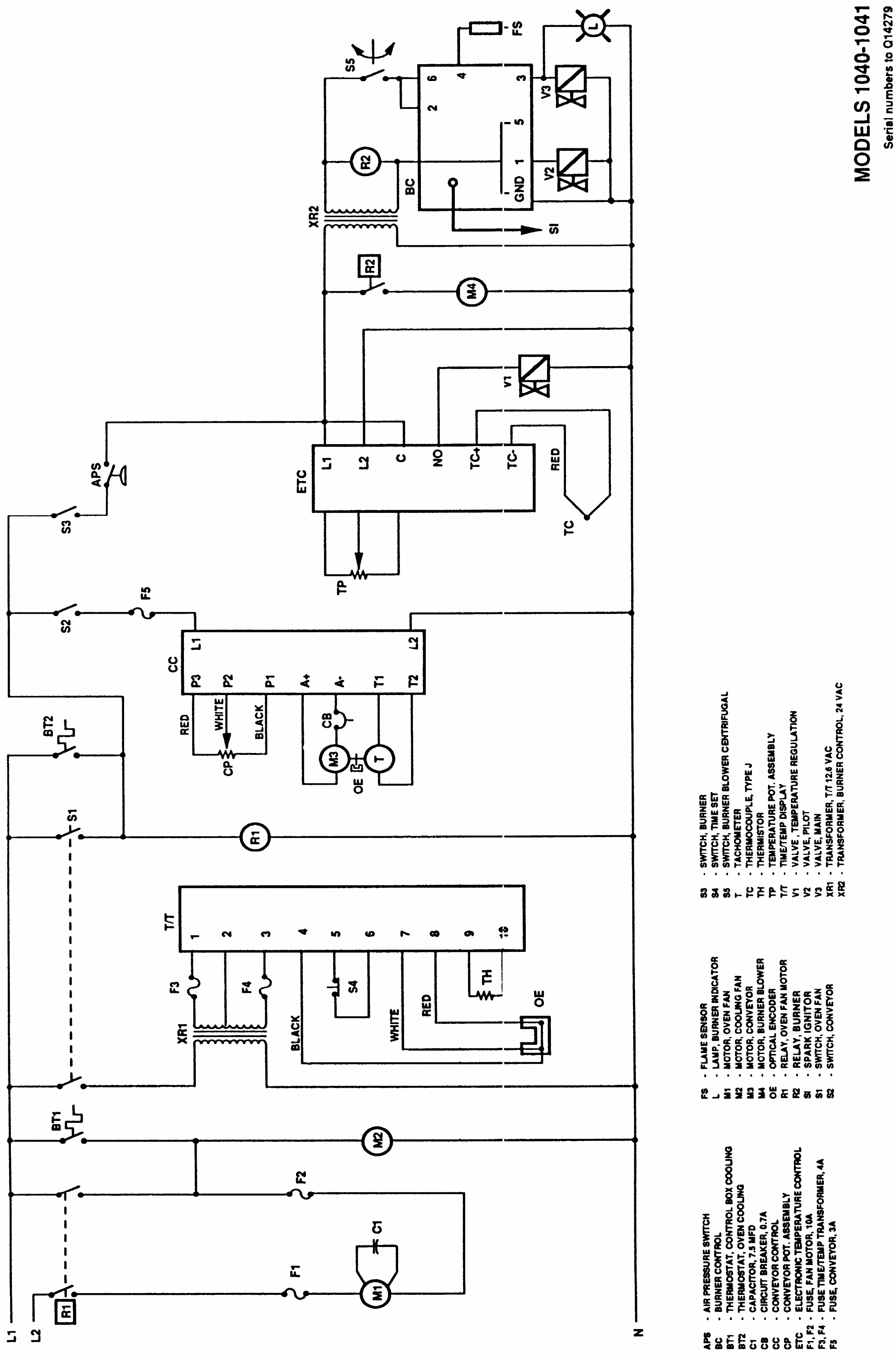
SCHEMATIC / 1022, 1023 – S/N Q19077 & BELOW



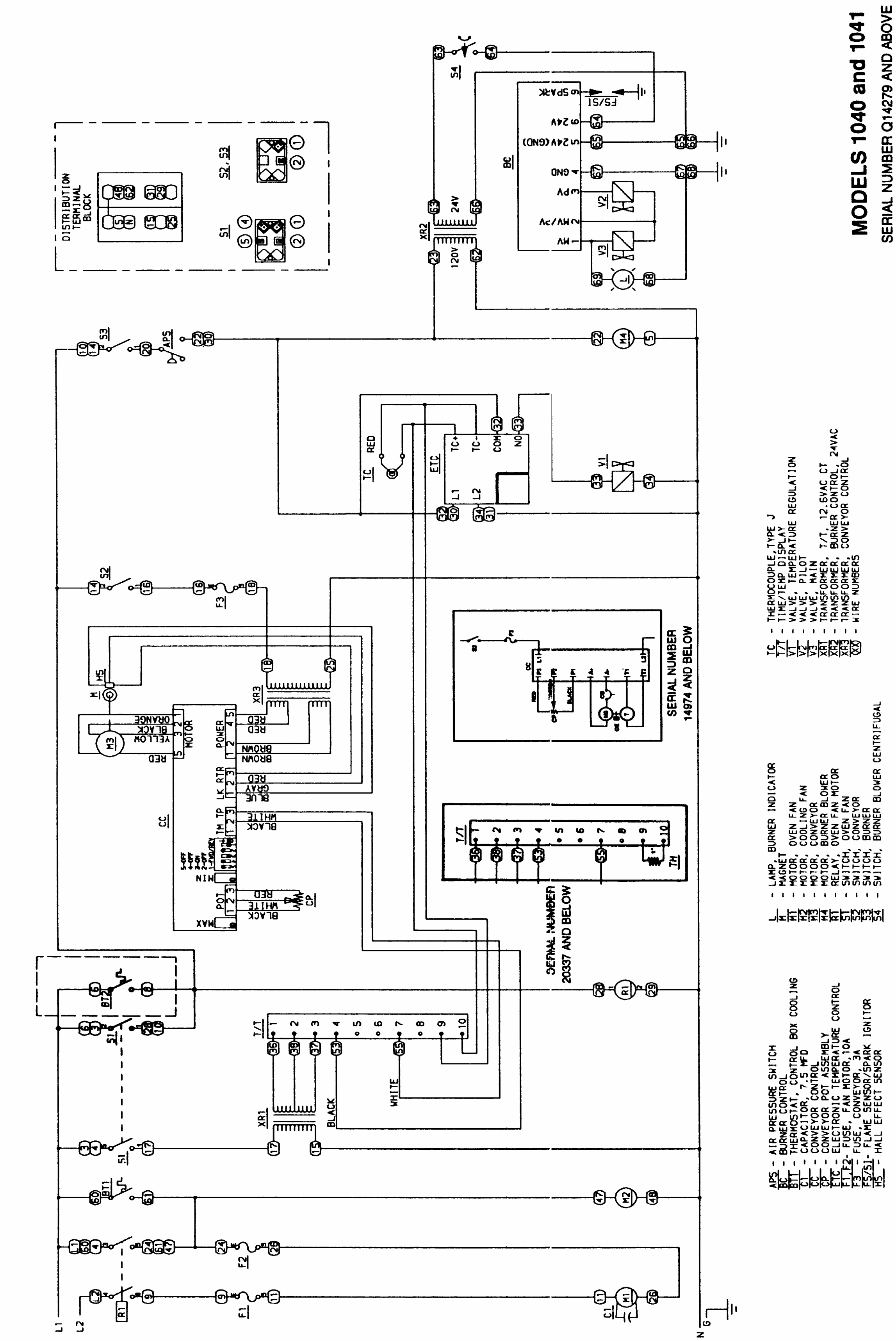
SCHEMATIC / 1022, 1023 – S/N Q19078 & ABOVE



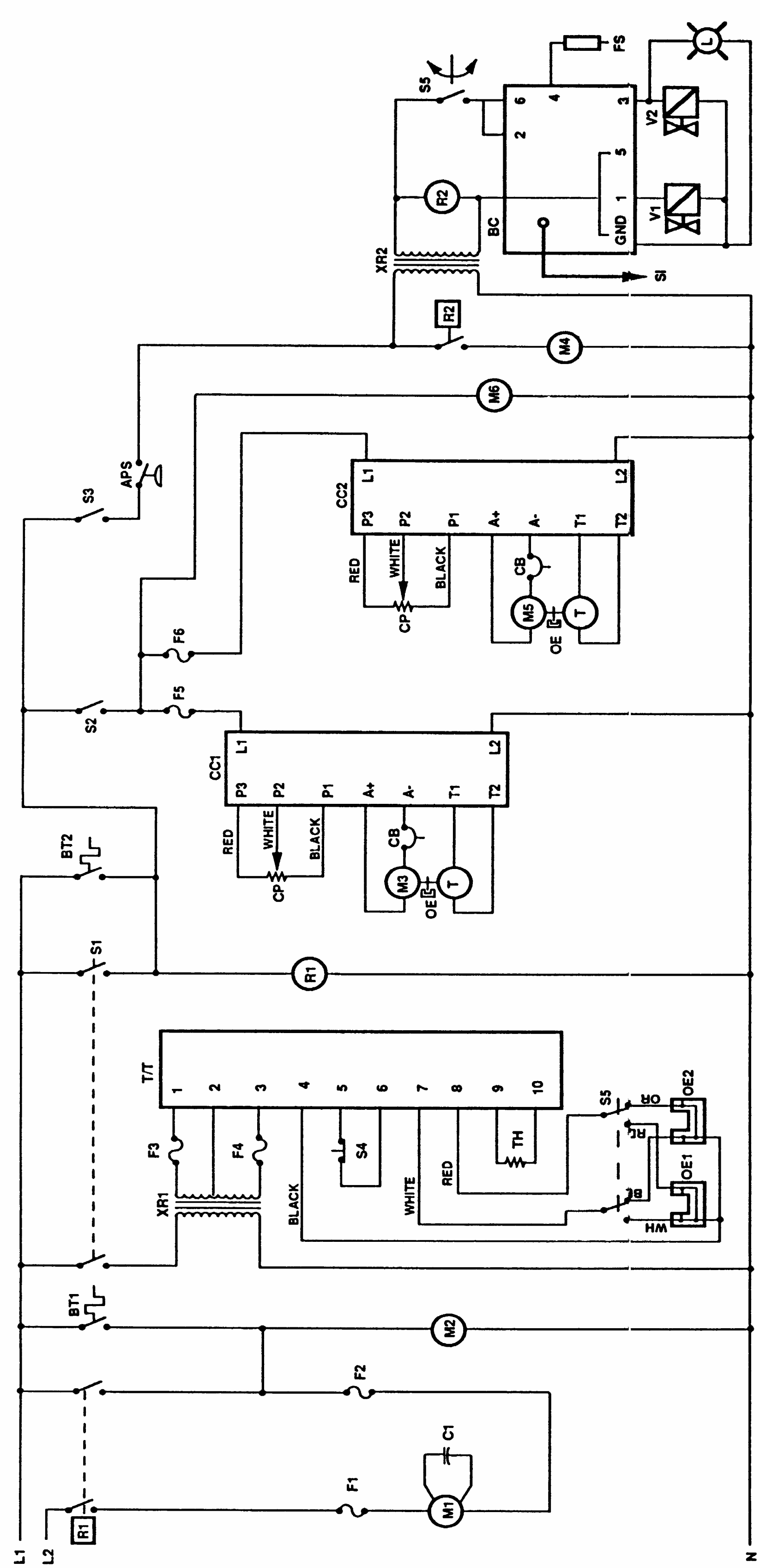
SCHEMATIC / 1040, 1041 – S/N Q14279 & BELOW



SCHEMATIC / 1040, 1041 – S/N Q14280 & ABOVE



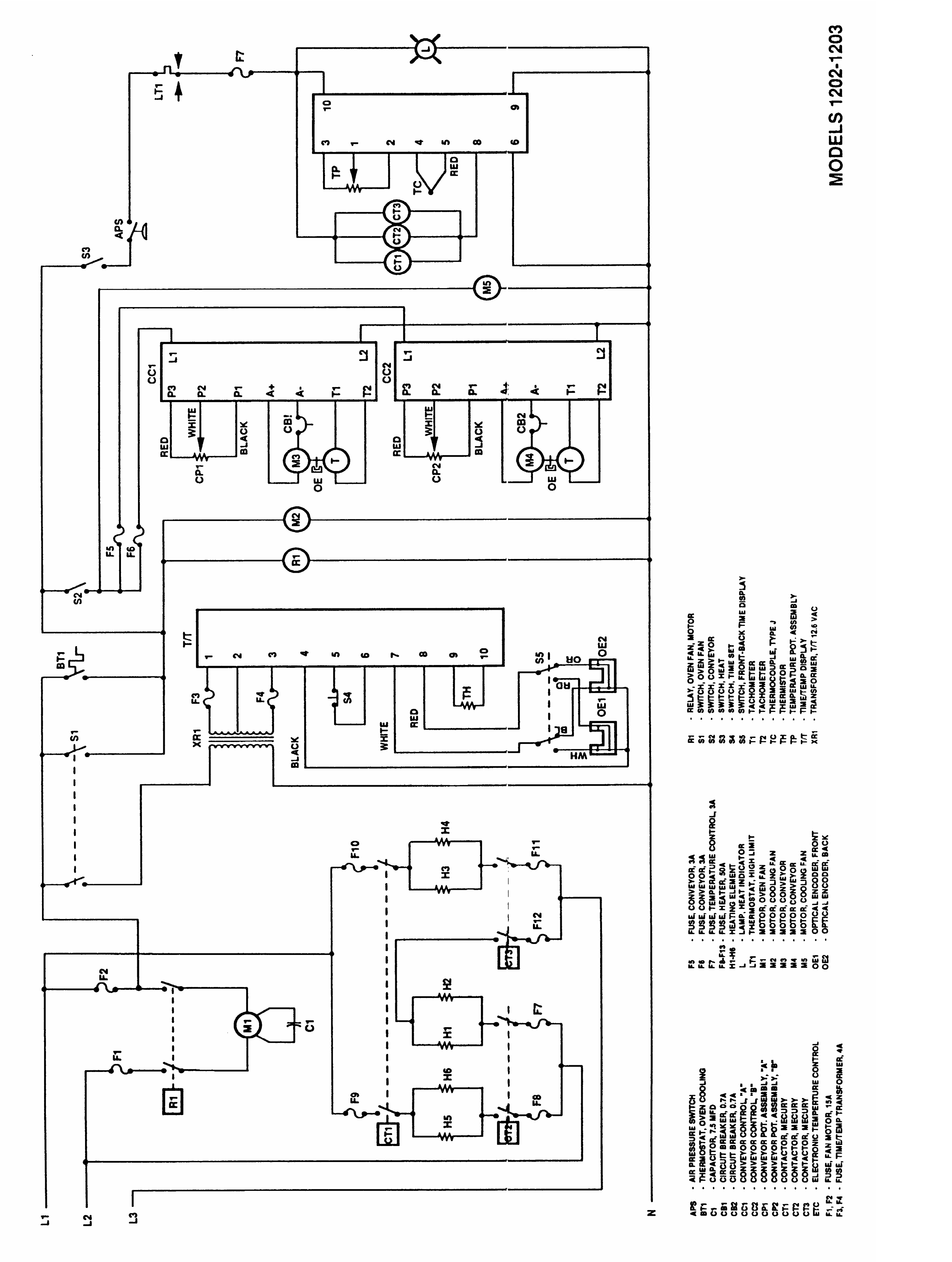
SCHEMATIC / 1200, 1201



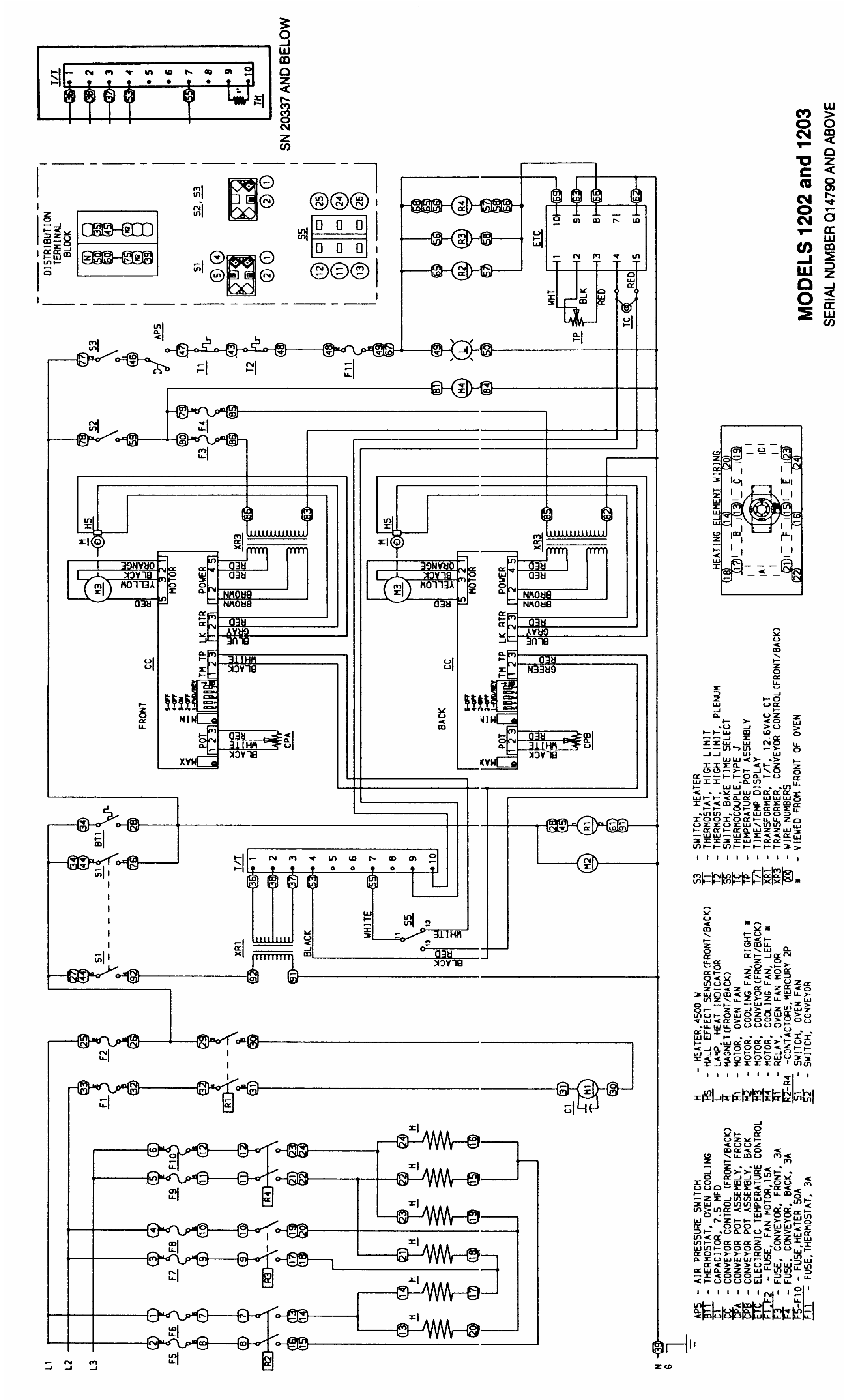
MODELS 1200-1201

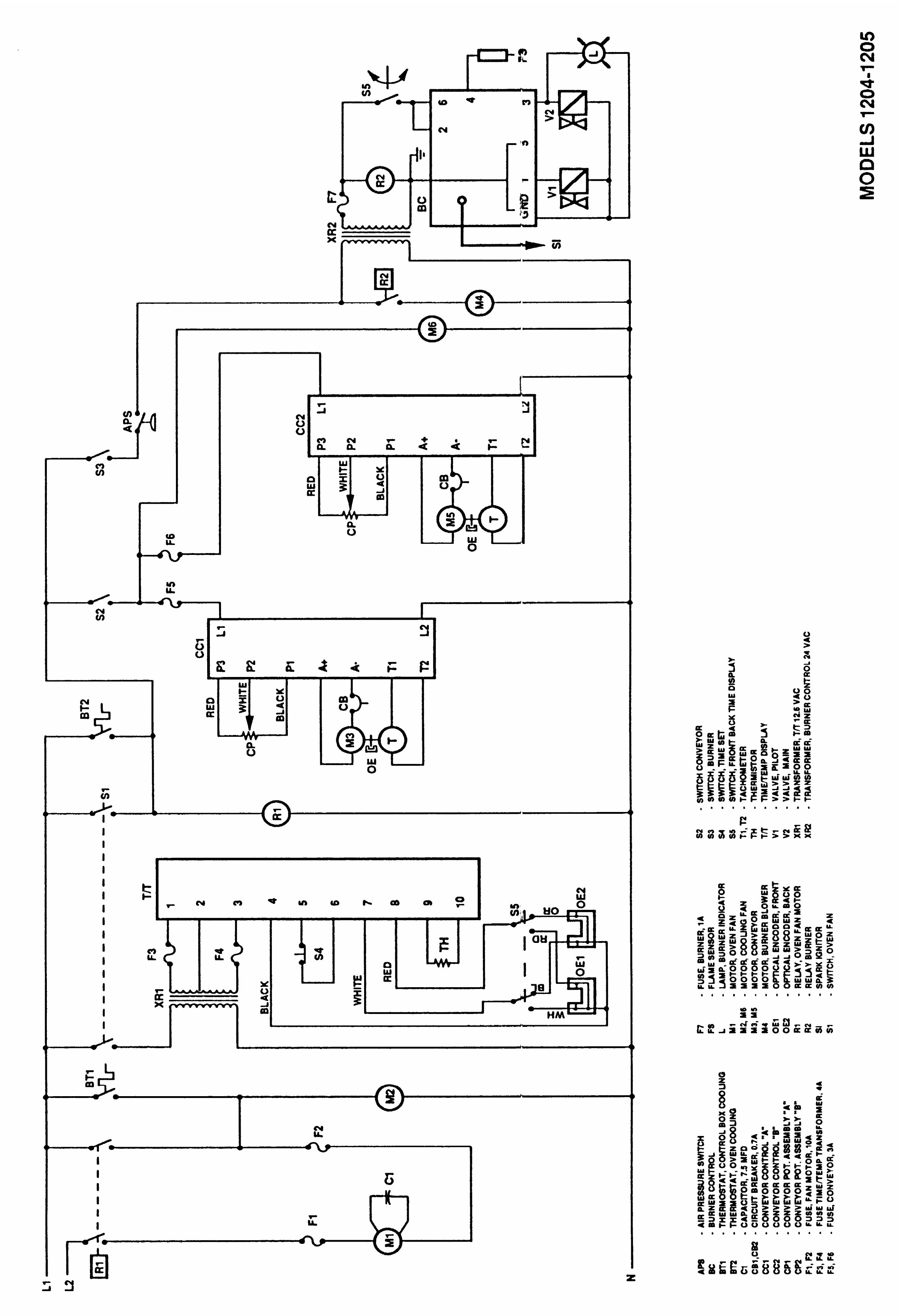
APS	- AIR PRESSURE SWITCH
BC	- BURNER CONTROL
BT1	- THERMOSTAT, CONTROL BOX COOLING
BT2	- THERMOSTAT, OVEN COOLING
C1	- CAPACITOR, 7.5 MFD
CB1,CB2	- CIRCUIT BREAKER, 0.7A
CC1	- CONVEYOR CONTROL "A"
CC2	- CONVEYOR CONTROL "B"
CP1	- CONVEYOR POT. ASSEMBLY "A"
CP2	- CONVEYOR POT. ASSEMBLY "B"
F1, F2	- FUSE, FAN MOTOR, 10A
F3, F4	- FUSE TIME/TEMP TRANSFORMER, 4A
F5, F6	- FUSE, CONVEYOR, 3A
FS	- FLAME SENSOR
L	- LAMP, BURNER INDICATOR
M1	- MOTOR, OVEN FAN
M2, M 6	- MOTOR, COOLING FAN
M3, M5	- MOTOR, CONVEYOR
M4	- MOTOR, BURNER BLOWER
OE1	- OPTICAL ENCODER, FRONT
OE2	- OPTICAL ENCODER, BACK
R1	- RELAY, OVEN FAN MOTOR
R2	- RELAY BURNER
SI	- SPARK IGNITOR
S1	- SWITCH, OVEN FAN
S2	- SWITCH CONVEYOR
S3	- SWITCH, BURNER
S4	- SWITCH, TIME SET
S5	- SWITCH, BURNER BLOWER CENTRIFUGAL
S6	- SWITCH , FRONT BACK TIME DISPLAY
T1,T2	- TACHOMETER
TH	- THERMISTOR
T/T	- TIME/TEMP DISPLAY
V1	- VALVE PILOT
V2	- VALVE, MAIN
XR1	- TRANSFORMER, T/T 12.6 VAC
XR2	- TRANSFORMER, BURNER CONTROL 24 VAC

SCHEMATIC / 1202, 1203 S/N Q14790 & BELOW

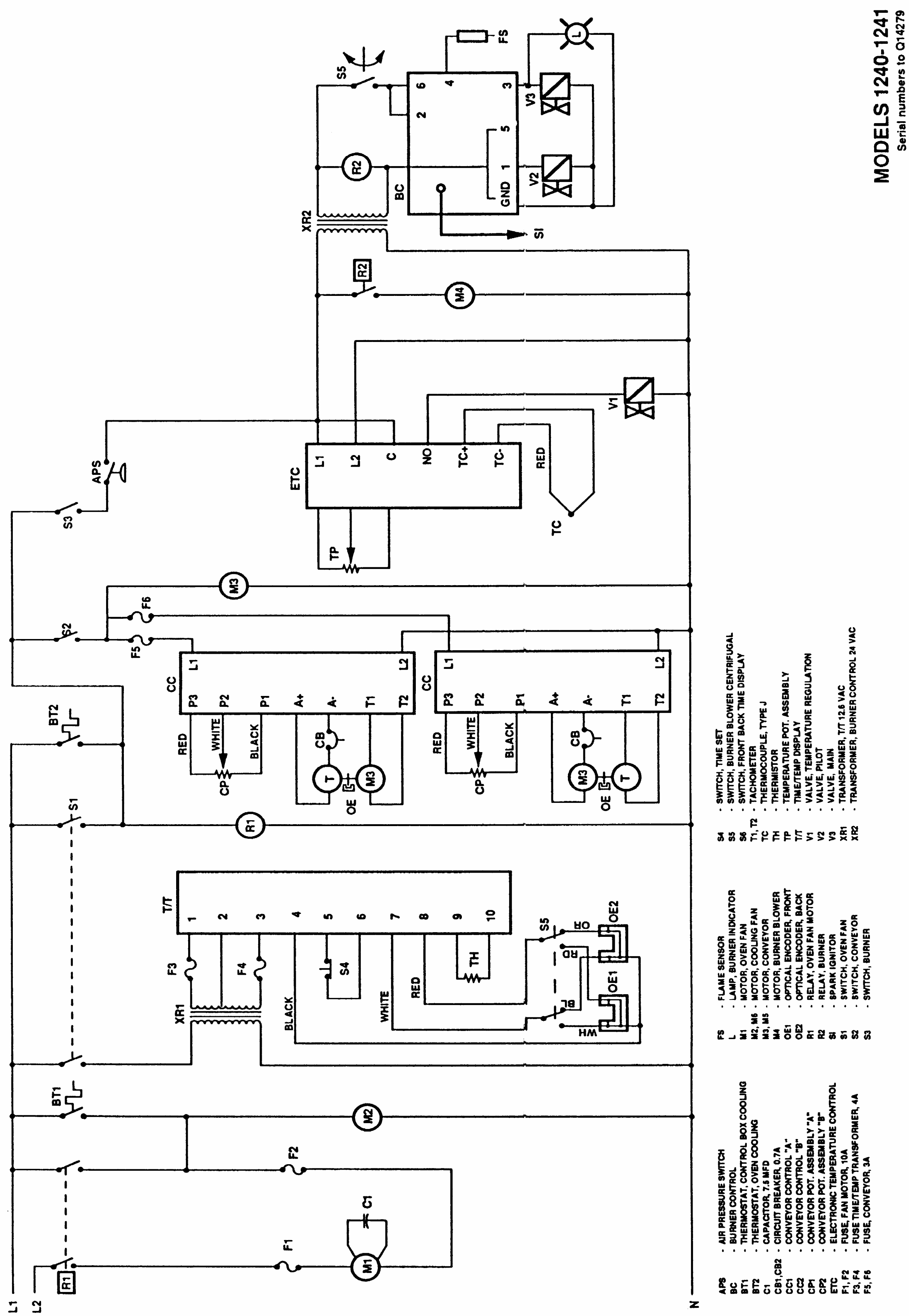


SCHEMATIC / 1202, 1203 S/N Q14791 & ABOVE

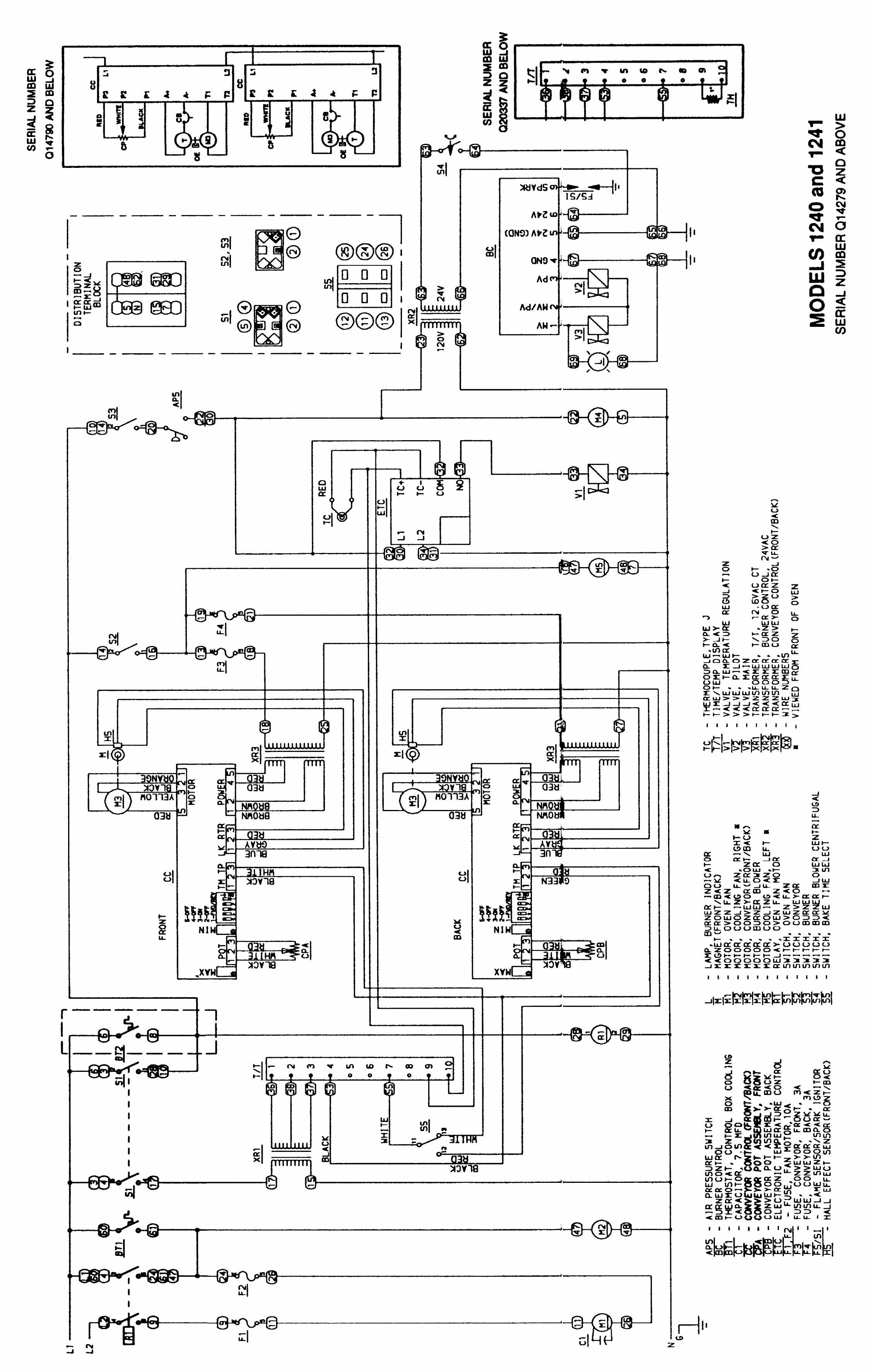



MODELS 1204-1205
APS - AIR PRESSURE SWITCH
BC - BURNER CONTROL
BT1 - THERMOSTAT, CONTROL BOX COOLING
BT2 - THERMOSTAT, OVEN COOLING
C1 - CAPACITOR, 7.5 MFD
CB1,CB2 - CIRCUIT BREAKER, 0.7A
CC1 - CONVEYOR CONTROL "A"
CC2 - CONVEYOR CONTROL "B"
CP1 - CONVEYOR POT. ASSEMBLY "A"
CP2 - CONVEYOR POT. ASSEMBLY "B"
F1, F2 - FUSE, FAN MOTOR, 10A
F3, F4 - FUSE TIME/TEMP TRANSFORMER, 4A
F5, F6 - FUSE, CONVEYOR, 3A
F7 - FUSE, BURNER, 1A
F8 - FLAME SENSOR
L - LAMP, BURNER INDICATOR
M1 - MOTOR, OVEN FAN
M2, M6 - MOTOR, COOLING FAN
M3, M5 - MOTOR, CONVEYOR
M4 - MOTOR, BURNER BLOWER
OE1 - OPTICAL ENCODER, FRONT
OE2 - OPTICAL ENCODER, BACK
R1 - RELAY, OVEN FAN MOTOR
R2 - RELAY BURNER
SI - SPARK IGNITOR
S1 - SWITCH, OVEN FAN
S2 - SWITCH CONVEYOR
S3 - SWITCH, BURNER
S4 - SWITCH, TIME SET
S5 - SWITCH, FRONT BACK TIME DISPLAY
T1, T2 - TACHOMETER
TH - THERMISTOR
T/T - TIME/TEMP DISPLAY
V1 - VALVE, PILOT
V2 - VALVE, MAIN
XR1 - TRANSFORMER, T/T 12.6 VAC
XR2 - TRANSFORMER, BURNER CONTROL 24 VAC

SCHEMATIC / 1240, 1241 – S/N Q14279 & BELOW



SCHEMATIC / 1240, 1241 – S/N Q14280 & ABOVE



TROUBLESHOOTING GUIDE 1000 & 1200

GAS OVENS

SYMPTOM	POSSIBLE CAUSE	EVALUATION
Oven fan will not run	Incoming Power Supply	Check breakers/ Reset if required / Call Power Co. if needed.
NOTE:	(Export Ovens)	For some export ovens, there is a control circuit step-down transformer. This transformer steps down supply voltage to 120 VAC. If main fan will not run, the secondary of this transformer must be checked for 120 VAC output. Check specific oven model schematic for circuit location.
	Oven Fan Fuse(s)	Check and/or Replace
	Fuse Holder	Check and/or Replace
	Fan Switch	Check continuity between switch terminals.
	Main Relay	Check continuity to 120 VAC coil. Check for power to relay coil (120 VAC). Check for 208/240 VAC to relay terminals. Visually check for contact pull-in.
	Fan Motor	Check for opens, shorts, or grounds. WITH POWER OFF: Turn Fan Blade to check for locked rotor.
	Capacitor	Check for opens, shorts, or grounds.
No Main Fan Cool Down	Cool Down Thermostat	Check cool down thermostat (thermostat closes at 160°F and opens at 140°F). Check for power (120 VAC) at cool down thermostat. With the cool down thermostat pre-heated, check for continuity. If switch is open, replace.
No Control Box Cooling(For ovens equipped with Control Box Cooling Fan)	Main Fan Relay	Check for power to Main Fan Relay. Visually check for contact pull in.
NOTE:	(Export Ovens) Axial Cooling Fan	(For ovens equipped with a control circuit step-down transformer, the supply voltage for the cooling fan is 240 VAC.) WITH POWER OFF: check for locked rotor. Check for power (120 VAC) to cooling fan. If 120 VAC is present at the fan motor and the fan does not run, replace fan assembly.
No automatic control box cooling (For ovens equipped with control box cooling fan)	Incoming Power Supply	Check breakers/Reset if needed. Check for incoming power (120 VAC)at cooling fan thermostat.
	Cooling Fan Thermostat	Check cooling fan thermostat (thermostat closes at 120°F and opens at 100°F). With cooling fan thermostat pre-heated, check for continuity. If switch is open, replace.
	Axial Cooling Fan	Check for 120 VAC to cooling fan, if present and fan does not run, replace fan.
Control box cooling fan continues to run	Cooling Fan Thermostat	See "Cooling Fan Thermostat"
Oven will not heat	Gas Supply	Check for adequate gas supply to oven.
	Manual Gas Shut-off Valve	Check to see that manual shut-off valve is open.
	Fan Switch	Check to see that fan switch is "on".
	Main Oven Fan	Check if main oven fan is operating. If not, refer to "Oven fan will not run". Page 20.
	Burner Switch	Check for 120 VAC to neutral on both sides of switch. If switch is closed and 120 VAC is present on one side only, replace the switch.

	Air Pressure Switch	Check for 120 VAC on both sides of switch. If voltage present on one side only, check for air tube blockage. Adjust air switch. If above fails, replace air pressure switch.
	Transformer, 24 VAC	Check for 120 VAC to primary of transformer. Check for 24 VAC from secondary of transformer. If there is primary voltage, but no secondary voltage, replace transformer.
NOTE:	(Model 1004 & 1005)	For oven models 1004 and 1005, there is a 1 Amp fuse located between the 24 VAC output from the transformer and the coil of the burner motor relay. If there is 24 VAC output from the transformer, but no burner motor relay action, check fuse and fuse holder. Replace as necessary.
	Burner Motor Relay	Delete burner motor relay refer to Section D, Page 34.
	Burner Blower Motor	Check for 120 VAC supply to burner blower motor. If 120 VAC is present and motor does not run, replace motor. WITH POWER OFF: turn blower wheel to check for locked rotor.
	Centrifugal Switch of Burner Blower Motor	Check for 24 VAC output from secondary of transformer. If voltage is present, check for 24 VAC at pin 6 and the ground bar on ignition control and valve assembly. If the burner blower motor is running and there is no voltage at pin 6 and the ground bar on the ignition control valve, replace the burner blower motor.
For ovens with Johnson Controls Ignition Control **(For ovens with Honeywell Ignition control, See Pg. 21)**	Ignition Control and Valve Assembly	Check for 24 VAC supply to the ignition control and valve assembly at pin 6 and the ground bar. If voltage is present, check for 24 VAC across pin #1 and the ground bar (pilot valve). If voltage is not present, replace electronic control package. If the pilot valve is energized, check to see that the high voltage ignitor circuit is also energized. To check, disconnect the ignitor lead from the bottom of ignition control. Place female terminal of ignitor lead approximately 1/8" from terminal post on ignition control. Spark should jump the 1/8" gap. If no spark is present, replace ignition control.
	No Pilot	If the ignition control is supplied with 24 VAC, and the pilot valve (internal to valve assembly) and ignitor circuits are energized, visually check for pilot flame. This may be done by opening the small inspection door on the end of the burner, or by opening the main oven door and looking under the lower finger housings on the right side of the oven. If no pilot flame is visible, check the following.
	Pilot Shut-off Valve	Check to see that pilot shut-off valve is open (shut-off valve is located between ignition control and valve assembly and burner.)
	Pilot Tube	Check for gas pressure at pilot tube. Disconnect pilot tube at burner and connect manometer to pilot tube. If no gas pressure is present, check for blockage in pilot tube or pilot shut-off valve. If these are clear, and there is gas supplied to the oven, replace the ignition control and valve assembly.
	Pilot Orifice	If there is gas pressure at the pilot tube, check the pilot orifice for obstructions. Replace as need
	Burner Ignitor	Check the burner ignitor head for any obstructions, also check for frayed or broken wire, any type of damage to spark gap (.100 in. 2.5 m.m.) If there is visible damage, replace ignitor assembly.

Pilot flame but no main flame	Flame Sensor	(There should be a visible pilot flame at this time.) To check for proper flame sensor operation, connect a digital multimeter (capable of measuring D. C. microamperes) in series between the flame sensor wire (normally connected to terminal #4) and terminal #4. NOTE: This is a current measurement and the meter must be connected in series. This procedure is for checking the pilot flame only. Remove main valve wire (Red) from terminal #3 on ignition control. With a visible pilot flame, the current readings should be as follows: Johnson G-65 control, 0.2 micro amp. D.C. minimum/Johnson G-60 control, 0.7 micro amp. D.C. minimum. If these values are not achieved, replace flame sensor. Also check for any type of damage to flame sensor wire and connections.
	Ignition Control and Valve Assembly	If there is a pilot flame, and there is sufficient micro amp. current at terminal #4, check for 24 VAC that the main valve (internal to valve assembly) has opened. Connect a manometer to the manifold gas pressure tap located on the back side of the ignition control and valve assembly. If no gas is present, replace ignition control and valve assembly.
For ovens with Honeywell ignition control	Centrifugal Switch of Burner Blower Motor	Check for 24 VAC output from secondary of transformer. If voltage is present, check for 24 VAC at terminals marked "24V" and "24V gnd" on Ignition Control. If the Burner Blower Motor is running and there is no voltage at terminals 24V and 24V gnd on the ignition control, replace the Burner Blower Motor.
	NOTE:	These Ignition Controls have a 30 second pre-purge(Delay) and a 15 second lock-out time – The Ignition Control will try for ignition for 15 seconds and then shut-off. To Re-try for ignition, turn off burner switch, wait 30 seconds and re-try ignition.
	Ignition Control	Check for 24 VAC supply to ignition control at terminals "24V" and "24V gnd". If voltage is present, check for 24V at terminal "P.V. (Pilot Valve) and "gnd". If voltage is not present, replace Ignition Control. If the pilot valve is energized, check to see that the high voltage ignitor circuit is also energized. To check, disconnect the ignitor lead from the ignition control. Place the terminal of ignitor lead approximately 1/8" from terminal post on Ignition Control. Spark should jump the 1/8" gap. If no spark is present, replace ignition control.
No Pilot		If the ignition control is supplied with 24 VAC and the pilot valve (in gas valve) and ignitor circuits
	Pilot Shut-off Valve	If no pilot flame is visible, check to see that the pilot shut-off valve is open(shut-off valve is located between gas valve and burner).
	Pilot Tube	Check for gas pressure at pilot tube. Disconnect pilot tube at burner and connect manometer to pilot tube. If no gas pressure is present, check for blockage in pilot tube or pilot shut-off valve.
	Pilot Orifice	If there is gas pressure at the pilot tube, check the pilot orifice for obstructions. Replace as needed.
	Burner Ignitor	Check the burner ignitor head for any obstructions, also check for frayed or broken wire, any type of damage to spark gap (.100 in. 2.5 mm) If there is visible damage, replace ignitor assembly.

Pilot flame but no main flame	Spark Ignitor (Flame Sensor)	(There should be a visible pilot flame at this time). NOTE: The Honeywell Ignition Control uses the spark ignitor as the flame sensor. If spark continues, check for proper ground connections at Ignition Control. Check pilot orifice for any partial blockage. If the above checks OK, replace ignition control. If spark stops when pilot is lit, check for 24 VAC across M.V. - M.V/ P.V. terminals, if voltage is not present, replace ignition control. If voltage is present at terminals M.V. - M.V./P.V., the indicator light on the control panel should be on, verify that the main valve has opened, connect manometer to manifold gas pressure tap(located on the
Red Indicator Light is on, but no main flame**(For ovens with mechanical thermostat)**	Temperature Control Valve (Robert Shaw)	Check for gas supply at temperaturecontrol. Check for temperature control set above 300℉.
	Main Orifice	Check for blockage of main orifice. If there is no blockage to the main orifice, replace the temperature control.
(For ovens with Electronic Temperature Control)	Temperature Control Potentiometer	Check for 120 VAC across L1 and L2on temperature control board. Potentiometer (1000 ohm,1 turn) WITH POWER OFF: check ohms across red and black leads, the ohm reading should be 0 to1000 ohms as the dial is turned. From green to red, the reading should be 1000 ohms steady throughout the full turn of the dial.

NOTE: Ovens S/N Q18037 and above, the potentiometer is internal to temperature control. Proceed to next component.

	Thermocouple Probe	Remove thermocouple leads from the temperature control board, and measure the millivolt output of these leads. Refer to chart on page 38 in the adjustment section for proper readings.
	Temperature Control	Turn temperature control dial to full "on" position. Measure for 120 VAC across terminals "N.O." and "L2", if voltage is not present; replace control.
	Solenoid Valve	If voltage is present at terminals "N.O."and "L2", check for voltage at solenoid valve. If voltage is present, listen for valve to open and close. Also, check for opens and shorts in coil. If solenoid valve is defective, replace
Intermittent Heating		Both the main fan motor and burner blower motor are equipped with thermo-protection and will cease to operate when not cooled properly. This can cause the units to cycle on and off intermittently. Also, most of the problems listed under "oven will not heat" can cause intermittent failures.

For continuing intermittent problems, a series of test lights may be made and installed in the ovens. The lights will allow the customer to advise the service technician a trouble code when the oven fails.

The lights should be connected in the following manner:

Light#l attached in 120VAC line after Air Pressure Switch.
Light#2 attached after 120VAC contacts of Burner Motor Relay (or, refer to Bulletin #028 for Relay Removal).
Light#3 in 24VAC Burner Transformer Secondary.
Light#4 in 24VAC at terminal #6 of Johnson control valve or "24V" on Honeywell Control.
Light#5 in 24VAC at terminal #1 of Johnson control valve or "PV" on Honeywell Control.
Light#6 in 24VAC at terminal #3 of Johnson control valve or "MV" on Honeywell Control.
CODE:
All lights off - lights of main power, main fan off, air pressure switch out.
1 on 2 off 3 on 4 off 5 off 6 off - Burner Motor Relay bad.

1 on 2 on 3 on 4 off 5 off 6 off	- Burner Motor Centrifugal Switch bad.
1 on 2 on 3 on 4 on 5 off 6 off	- Ignition Control bad.
1 on 2 on 3 on 4 on 5 on 6 off	- Pilot Shield missing or warped, Flame Sensor bad, Pilot - Orifice plugged, or Gas Valve bad.
1 on 2 on 3 on 4 on 5 on 6 on	- Unit still not working Main Orifice plugged, Gas Valve bad, - Temperature Control bad. - However, Main Orifice would not be intermittent problem.

TROUBLESHOOTING GUIDE

ELECTRIC OVENS MODEL SERIES 1000 & 1200

SYMPTOM	POSSIBLE CAUSE	EVALUATION
Oven fan will not run	Incoming Power Supply	Check breakers/Reset if required/ Call Power Co. if needed.
NOTE:	(Export Ovens)	For some export ovens, there is a control circuit step-down transformer. This transformer steps down supply voltage to 120 VAC. If main fan will not run, the secondary of this transformer must be checked for 120 VAC output. Check specific oven model schematic for circuit location.
	Oven Fan Fuse(s)	Check and/or Replace
	Fuse Holder	Check and/or Replace
	Fan Switch	Check continuity between switch terminals.
	Main Relay	Check continuity to 120 VAC coil. Check for power to the relay coil (120 VAC). Check for 208/220/240 VAC to relay terminals. Visually check for contact pull-in
	Fan Motor	Check for opens, shorts, or grounds.WITH POWER OFF: Turn Fan Blade to check for locked rotor.
	Capacitor	Check for opens, shorts, or grounds.
No Main Fan Cool Down	Cool Down Thermostat	Check cool down thermostat (thermostat closes at 160°F and opens at 140°F). Check for power (120 VAC) at cool down thermostat. With cool down thermostat pre-heated, check for continuity. If switch is open, replace.
No control box cooling	Main Fan Relay	Check for power to main fan relay. Visually check for contact pull in.
	Axial Cooling Fan	WITH POWER OFF: turn the fan blade to check for locked rotor. Check for power (120 VAC) to cooling fan. If 120 VAC is present at the fan motor and the fan does not run, replace fan assembly.
Oven will not heat	Main Oven Fan	Check if main oven fan is operating. If not, refer to "Oven fan will not run."
	Heat Switch	Check for continuity between switch terminals with switch on. Replace if defective.
	Air Pressure Switch	Check for 120 VAC on both sides of switch. If voltage present on one side only, check for air tube blockage, adjust air switch. If above fails, replace air pressure switch.
	Hi Limit Thermostat	Terminals are normally closed. If open, reset and test oven for proper operation. If thermostat will not hold for maximum oven temperature, and oven is not exceeding temperature dial setting, replace thermostat (rated at 190°F).
NOTE:	Hi Limit Thermostat (Model 1032)	Terminals are normally closed. If open, reset and test oven for proper operation. If thermostat will not hold for maximum oven temperature, and oven is not exceeding temperature dial setting. Replace the thermostat. Check for proper location of sensing bulb in its spring holder. If hi-limit is still tripping, replace (rated for 368°C).
	3 Amp Temperature Control Fuse	Check and/or Replace
	Fuseholder	Check and/or replace.

	Temperature Control Board	Check for 120 VAC input to temperature control board. If not present, check wiring from fuse holder to temperature control board. Turn the temperature adjustment dial to the maximum temperature position Check for 120 VAC at coil of mercury contactor(s). Next, short the leads of thermocouple on the temperature control board, check for 120 VAC at coil of mercury contactor(s). If voltage is not present, replace temperature control board. If voltage is present proceed.
	Temperature Control Potentiometer	Potentiometer is 0 to 2.5K ohm. WITH POWER OFF: remove the leads from the temperature control board terminals 1, 2, and 3 and measure ohms from black to white leads. The ohm reading should be 0 to approximately 2.5K ohms as the dial
	Thermocouple Probe	Remove thermocouple leads from the temperature control board, and measure the millivolt output of the leads. Refer to chart in adjustment section for proper millivolt readings.
	Mercury Contactor(s)	Check for 120 VAC to the contactor coil. If voltage is present and contactor will not activate, replace the contactor(s). Also check each contactor for proper high voltage input and output.
	50 Amp Fuses	If there is no high voltage input to the mercury contactor(s), check the 50 amp fuses and replace if necessary.
	Heater Elements	Check the Amp. draw on each hot leg for proper load. Check the specifications plate for rating information. If the Amp. draw is low or high, check the individual elements for opens, shorts, and proper resistance . To check resistance of the elements, turn off the power! Remove all leads from the elements and use an accurate digital VOM. The element resistance should be as follows: 208V - 9.8 ohms approx. 220V - 10.5 ohms approx. 240V - 13 ohms approx. If all readings are not correct, replace elements as needed.
Oven heats with switch off	Mercury Contactor(s)	The mercury contactor has probably malfunctioned in the closed position. If there is no voltage to the operating coil, but there is high voltage at the contactor output, replace the mercury contactor.
Conveyor will not run (S/N 100-4389)	Voltage Supply	Check incoming voltage supply at line 1 to neutral. There should be a voltage reading of 120 VAC. If not present, check breakers.
	3 Amp Fuse	This conveyor fuse is located on the front panel. Replace if defective.
	Fuse Holder	Check and/or Replace.
	Conveyor Switch	Same procedure as for fan switch.
	D. C. Motor Control Board	Check for 120 VAC input to D. C. control board across L1 and L2. Check the 3 amp fuse on the D. C. control board. Check for D. C. voltage at terminal F1 and F2. Voltage should be 10 VDC $\pm$ 10 steady. If this voltage is not present, replace D. C. control board. Check for D. C. voltage output to the motor across terminals A1 and A2 (this voltage should be approx. 125 VDC at maximum conveyor motor speed).

	Speed Control Potentiometer	This is a 0 to 400 ohm or 0 to 500 ohm, 10-turn potentiometer. WITH POWER OFF: remove the red, white, and black leads from terminals S1, S2, S3. With a digital multimeter, check the ohm reading across the red to black leads. This ohm reading should be a steady 400-ohm, or 500-ohm, through the entire 10-turn rotation of the potentiometer. Check for shorts or opens or unsteady, ohm reading, if potentiometer is defective, replace. If the potentiometer checks OK, and there is no output at terminals A1 and A2, replace the D. C. control board.
	Reversing Switch	If there is D. C. voltage output from the motor control board, but the conveyor drive motor is not running, check the D.P.D.T. reversing switch.
	Conveyor Drive Motor	Check the conveyor drive sprocket for tightness. Disconnect the motor, check the red and black motor leads for opens, shorts or grounds. Check the brushes for excessive or abnormal wear. Replace as needed. Reconnect motor. Test for operation. If motor does not run, replace.
Conveyor will not run(S/N 4390 to Q190771000 Series) (S/N 4390-Q147901200 Series)	Voltage Supply	Check incoming voltage supply at line 1 to neutral. There should be a voltage reading of 120 VAC. If no present, check breakers. 3 Amp Fuse. This conveyor fuse is located on the front panel. Replace if defective.
	Fuseholder	Check and/or Replace.
	Fan Switch	See procedure for checking on Page 20.
	Conveyor Switch	Same procedure as for fan switch.
NOTE:	(Dual Belt Ovens)	Dual belt ovens utilize 2 complete independent conveyor drive systems. The trouble shooting procedures are the same as single belt ovens, except that the dual belt ovens use one each of the following: one "A" D. C. control board and one "B" D. C. control board.
	Speed Adjustment Potentiometer	This is a 0 to 5 K ohm, 10 turn potentiometer With power off, remove the red, black and white pot leads from the motor control board at terminals P1, P2 and P3. With a digital multimeter, check the ohm reading across the red lead (P3) to the black lead (P1). This reading should be 5 K ohms ± 5% as the pot is rotated from low to high. Place the meter leads on the red lead (P3) and on the white lead (P2) Rotating the pot. slowly, from low to high, the meter reading should show an even transition from O to 5 K ohms ± 5%. There should be
	DC Motor Control Board	Check for 120 VAC input to the control board at terminals L1 and L2. If not present, check the conveyor switch and wiring back to 3-amp fuse and then back to power source if necessary. If 120 VAC is present at L1 and L2, check the VDC output at terminals A+ and A-. If a DC voltage is not present, check the 4 amp and the 1 amp fuses on the control board. Also reset and check the mini breaker in the armature line to the gearmotor. If 120 VAC is present at terminals L1 and L2, but DC voltage is not present at A+ and A-, providing the 1 amp and 4 amp fuses are good, replace the board. If DC voltage is present at A+ and A-, but motor does not run, check gear motor as follows.

	Conveyor Gear Motor	If DC voltage is present at A+ and A- and the motor does not run, first check the mini breaker and then the conveyor. Refer to the next possible cause. Check the leads to the motor for evidence of any shorts or opens, and each lead to ground. If the motor fails the above tests, replace motor. Remove dust cover from the top of the motor and rotate motor shaft to determine if there is a locked rotor or a locked gear box (use care so encoder disc is not damaged).
	Conveyor	Check for any mechanical misalignment or improper adjustment. Also check for worn bearings. The Installation and Operations Manual shows proper conveyor belt adjustment. A conveyor belt that is over tightened will cause excessive bearing wear and sometimes, irregular speed.
Conveyor speed varying or intermittent	Power Supply	Check power supply at the DC control board for the 120 VAC at board terminals L1 and L2. If voltage is not present, check main circuit breakers.
	Tach generator and DC Motor Control Board	With the power to the DC motor control board turned off, remove the leads from terminals T1 and T2.Place the test leads of a digital meter on the tach leads, turn power on, and the meter reading should be approximately 30 to 35 VDC. This reading should be steady within ± 0.2 to 0.3 VDC. If this reading is not within ± 0.5 VDC, place the test meter probes on terminals A+ and A-. The meter reading should be approximately 150 to 160 VDC and steady within approximately 2 VDC. If the tach. voltage is unsteady, and the board output is steady, check the coupling for loose set screws or any type of damage. If the coupling checks good, the tach. is usually bad. If the board voltage output is unsteady beyond limits, then the board is probably bad. Always check the speed pot. Be sure it is okay before changing a board or tach. This test is not always 100% accurate as this test is not performed at operating speeds. However, this test is the best method currently available. Readjustment should always be attempted at least once before replacement. See procedure for board adjustment on page 44.
	DC Gearmotor	If the DC control board is steady then the problem may be the motor or gearbox. Check the brushes in the motor for excessive arching and/or unusual wear. Check the motor and gearbox from instruction located on page 27 under "possible cause" listing "Conveyor gear motor".
Conveyor will not run(S/N Q19078 & Up1000 Series) (S/N Q14791 & Up1200 Series)	Voltage Supply	Check incoming voltage supply at Line 1 to neutral. There should be a voltage reading of 120 VAC.
	Fan Switch	See procedure for checking on page 20.
	Conveyor Switch	Check for 120 VAC to conveyor switch. If no voltage is present, trace wiring back to the fan switch. WITH POWER OFF: Check continuity between switch terminals.
	Conveyor Fuse (3A)	Check, replace if necessary.
	Fuseholder	Check, replace if necessary.

	Conveyor Control(Stepper) Transformer	Check for 120 VAC supply to primary of transformer, if voltage is not present, trace wiring back to the fuse-holder. If voltage is present, check for output voltage from the transformer secondary. NOTE: this control transformer outputs (2) secondary voltages. Red Leads 29 VAC Brown Leads 10 VAC If BOTH secondary voltages are not present, replace the transformer.
	Speed Adjustment Potentiometer	This is a 0 to 50k ohm,10 turn potentiometer. WITH POWER OFF: remove the 3 pin potentiometer cable plug from the motor control board. With a digital multimeter, check the ohm reading across the red lead to the black lead, this reading should be 50k ohms ± 5% as the potentiometer is rotated through its 10 turn rotation. Place the meter leads on the red lead and white lead. Rotating the potentiometer slowly, from low to high, the meter should show an even transition from 0 to 50K ohms ± 5% through the 10 turn rotation of the potentiometer. There should be no dead or open spots through the 10 turns of the potentiometer. Check all three leads to ground. There should be no continuity to ground. If any of the above checks fail, replace the potentiometer.
	Conveyor Motor(Stepper) Control	NOTE: if the conveyor drive motor becomes jammed or begins to run at an uncontrolled speed, the conveyor motor will stop running. To reset, turn off the conveyor switch, wait 10 seconds, turn the conveyor switch on. If the motor does not run after attempting re-set, check for 2-29 VAC across the motor terminals 1 to 2 and 3 to 5 on the conveyor motor control. If voltage is not present at both sets of terminals, replace control
	Conveyor Drive (Stepper) Motor	Check the drive sprocket on motor out-put shaft to insure that it is tight.. Check motor windings – measurements should be approximately 2 ohms. Terminal 1-5, 2-6, 3-7, 4-8 WITH POWER OFF: Turn the motor shaft to check for jammed gear box. If motor shaft will not turn, replace conveyor drive(stepper) motor.
Time/Temp Display	12.6 VAC Power Supply	Measure the transformer primary inoperative for a nominal 120 VAC input. Measure the secondary voltage output which will be 12.5 to 15 VAC normally. Recheck secondary output at rear of Time/Temp Display. Terminals 1 to 3 should read 12.5 to 15 VAC. Terminals 1 to 2 and 2 to 3 should be exactly 1/2 of the reading across 1 to 3. If you do not get the above secondary readings, replace the transformer. If 120 VAC primary voltage is not available, refer to the schematic and trace circuit for incoming power failure. There is a 4 amp fuse in each red secondary lead. These may be jumpered (for test only) to determine if they are defective or intermittent.
NOTE:	(Dual Belt Ovens)	Dual belt ovens utilize a double pole double throw switch, which allows either of the optical encoders to be read from a single Time/Temp. Display. Check switch and replace as needed.

Temp Display out or inaccurate	NOTE: Time/Temp displays use two types of temperature sensor, Thermistor Probe – 2 yellow wires Thermocouple Probe 1 red wire and 1 white wire	Place your pyrometer thermocouple into the center between fingers T2 and T3 in the oven. Disconnect the yellow tipped thermistor leads from the time/temp. terminals 9 and 10. Measure the resistance of the thermistor probe. See chart in Section D for proper resistance readings.
	Thermistor Probe	Inspect the thermistor bulb for its proper location in its spring holder. Check for short in leads where they enter the sensor bulb. Also check each thermistor lead for short to ground.
	Thermocouple Probe	Place your pyrometer thermocouple into the center between fingers T2 and T3 in the oven. Connect temperature meter to thermocouple at terminals 9 & 10 on back of the time/temp display (Be sure to maintain proper polarity on thermocouple connections.) Compare actual oven temperature with the reading at the time/temp display. If the temperature readings match, recalibrate or replace time/temp display. If the readings do not match, replace thermocouple probe.
	Erratic time/temp display	If strange or unusual behavior is experienced such as a rolling of numbers, lock up at a given number, first check for a display circuit lock up. This can be caused by a voltage spike or surge. To eliminate this condition remove power from the time/temp. display by shutting off the main fan switch, or if display stays on, (older models) circuit breaker interruption may be required. This should eliminate the problem. If the problem continues, jumper the two fuses in the red wires leading from the 12.6 VAC transformer to the display. If this does not solve the problem, it may be coming in through the commercial power lines. Suggest that customer contact his power company for evaluation.
	Temp Display inaccurate erratic, or inoperative	Perform the power supply check, the thermistor probe check, and then perform the time/temp simulator test. Refer to page 51 for instructions. Remember, when using the time/temp simulator, remove all the leads from the back of the display except the 3 power leads. After completion of this test and if reinstalling back into the oven, the dip switches must be reset for oven operation.
	Time display inaccurate erratic, or inoperative	Perform all checks as in the above evaluation. If the time check is okay, refer to the next section optical encoder.
	Optical Encoder	The above time/temp test should have already been performed. Remove dust cover from the gearmotor and inspect the coupling and encoder disc. The coupling set screws should be tight and not slipping on the motor shaft or the tach. generator shaft. The encoder disc should be firmly attached to the coupling and not warped. Check the positioning of the optical encoder disc. The disc should not be touching the optical encoder assembly and the encoder assembly should be mounted so it is squarely facing the coupling shaft. This is to allow the infrared beams to be broken by the encoder disc. If all this is okay, then replace the optical encoder assembly.

Time Display inaccurate, erratic, or inoperative(S/N Q19078 & Above1000 Series) (S/N Q14791 & Above1200 Series)	Conveyor Drive (Stepper) Control	Perform all checks as in the above evaluation. If the time check is okay, refer to the next section. Check to see if the conveyor drive (stepper) motor is running. If motor is not running, refer to "Conveyor will not run" on page 28.
	Magnet	Check to insure that the magnet (cemented to shaft of conveyor drive (stepper) motor) has not been damaged, or come loose from motor shaft. Replace as needed.
	Hall Effect Sensor	Check for any physical damage to Hall Effect sensor (mounted on conveyor drive(stepper) motor). Check all wiring and connections for damage.
	Conveyor Drive (Stepper) Control	Check all connections for tightness or proper location and check all wiring for visible damage. Replace as needed. If there is still no time display, wire in (temporarily) a new conveyor drive control. If there is still no time display, reconnect original conveyor drive control. Replace Hall Effect Sensor.

REMOVAL, INSTALLATION & ADJUSTMENTS

MODEL SERIES 1000 &1200

CAUTION !

BEFORE REMOVING OR INSTALLING ANY COMPONENT IN THE IMPINGER OVEN BE SURE TO DISCONNECT ELECTRICAL POWER AND GAS SUPPLY

MOTOR, MAIN FAN

1. Shut off power at main breaker.
2. Remove flue by taking out the two (2) mounting screws.
3. Remove louvered motor cover from back of oven.
4. Remove wireway by taking out the ten (10) hex head screws.
   NOTE: On Series 1200 ovens there are two (2) wireways to be removed and there is extra wire coiled in the control box to allow the wires to hang below the oven back for removal.
5. Remove cooling fan if equipped.
6. Remove junction box cover below motor and disconnect motor leads. Make note of wire numbers and location for reinstallation.
   Remove the twelve (12) hex head bolts from the oven back and slide back straight out of the oven .
7. Remove two (2) hex head bolts from fan hub and remove fan from motor shaft.
   NOTE: Measure distance from fan blade to rear wall assembly before removal to aid in reassembly.
8. Remove the eight (8) hex head bolts from the motor mount and slide the motor assembly out of the oven back.
   Remove heat slinger, if so equipped, by taking out the two (2) hex head cap screws then remove motor by taking off motor clamp and removing the four (4) mounting nuts and washers.
9. Reassemble in reverse order. When reassembling trim the motor mount bolts off after the motor is mounted (if required). Be sure the heat slinger, if so equipped, is set at the proper clearance. (3/8" approximately with 1/16" clearance at motor mount bolts). When motor mount assembly is set on the oven back, align motor shaft in the center of the hole. Set fan assembly on the motor shaft .
   NOTE: Torque specs on bolts (150 in/lb. torque)

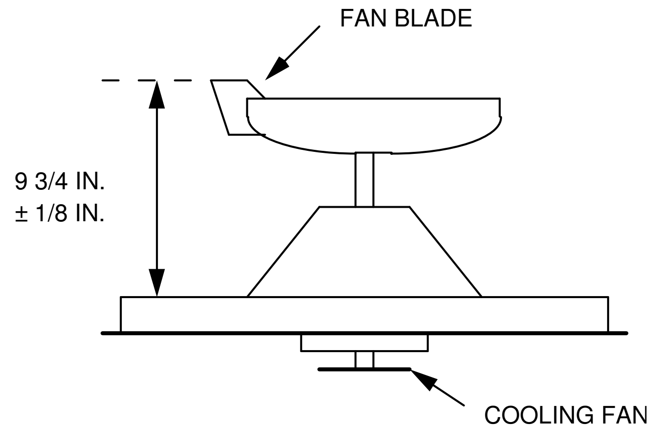
CAPACITOR, MOTOR

1. Shut off power at main breaker.
2. Remove motor cover from back of oven.
3. Discharge capacitor.
4. Remove and replace.

FAN, MAIN

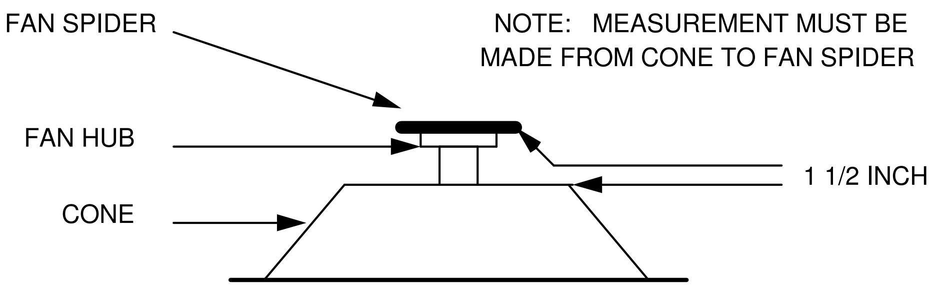
1. Shut off power at main breaker.
2. Remove back assembly. (See motor, main fan)

S. N. 100-4612 (GAS)
S. N. 100-4767 (ELECTRIC)



3. Reinstall and locate fan so that the front of fan blades are 9 3/4" from inside of oven back. (See Drawing)

S. N. 4613 & Above (GAS)
S. N. 4768 & Above (ELECTRIC)



4. Reinstall and locate fan so that the bottom of the fan spider is 1 1/2" from the top of the oven back cone (See Drawing)

RELAY, D.P.S.T.

1. Shut off power at main breaker.
2. Remove control panel top and front cover.
3. Remove cover from relay box.
4. Disconnect all wires and mark for replacement.
5. Remove relay by removing two (2) mounting screws.
6. Reassemble in reverse order.

COOL DOWN SWITCH

1. Shut off power at main breaker
2. Remove control panel top and front cover.
3. Remove the two (2) wires from the switch, located on the back wall of the control box.
4. Remove two (2) screws from the switch bracket.
5. Reassemble in reverse order, check condition of teflon insulator and be sure a aluminum sensing rod contacts the switch body.

COOLING FAN, CONTROL BOX

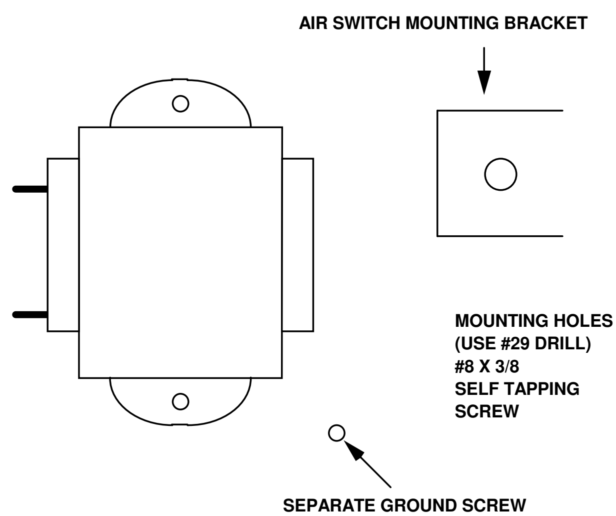
1. Shut off power at main breaker.
2. Remove control panel top and front cover.
3. Remove four (4) screws from the fan frame.
4. Disconnect female cord receptacle and remove fan.
5. Reassemble in reverse order.

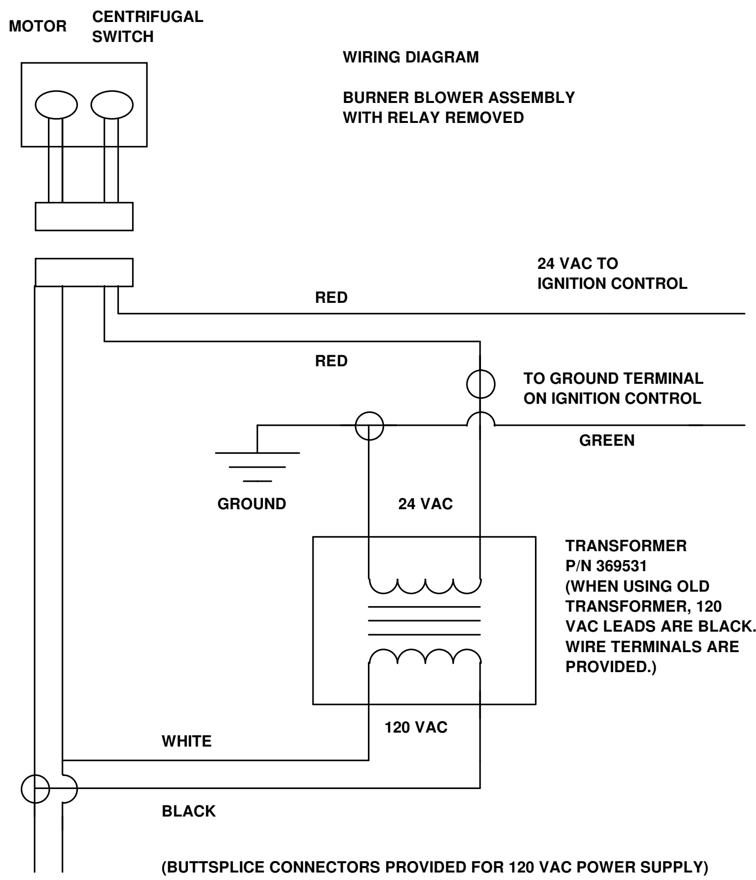
THERMOSTAT, COOLING FAN

1. Shut off power at main breaker.
2. Remove control panel top and front cover.
3. Remove lead wires and mark for reassembly.
4. Remove two (2) screws and remove thermostat.
5. Reassemble in reverse order.

BURNER BLOWER MOTOR

1. Shut off power at main breaker.
2. Remove control panel top and front panel.
   NOTE: Complete burner blower motor assembly, with control box (p/n 369359), is no longer available. The burner blower assembly (p/n 369265) has been changed to a burner motor kit (p/n 369366). When It is used in the 3 ft Impinger Gas oven, the following modification must be made:
3. Remove control box and components mounted on burner blower motor.
4. Mount transformer on air switch bracket as shown (use transformer as template).
5. Remove three (3) screws that attach blower assembly to burner housing.
6. Mount new blower assembly.
7. Wire as shown. See page 35.
8. Discard control box and relay.
9. Transfer air shutter assembly from old blower assembly to new blower assembly.
   MATERIAL NEEDED: #29 drill bit and #8 x 3/8 self tapping screws (3 each)





BLOWER WHEEL, BURNER

This is part of the burner blower motor assembly.

TO REMOVE THE BLOWER WHEEL FOR PERIODIC CLEANING:

1. Shut off power at main breaker.
2. Remove control panel top and front cover.
3. Remove air shutter held by 3 screws.
4. Loosen set screw on blower wheel hub and pull straight out.
5. Reassemble in reverse order.
   NOTE: There is no critical placement of the blower wheel on the motor shaft. Just back as far as it will go and then spin the blower to be sure it is not rubbing.

AIR PRESSURE SWITCH

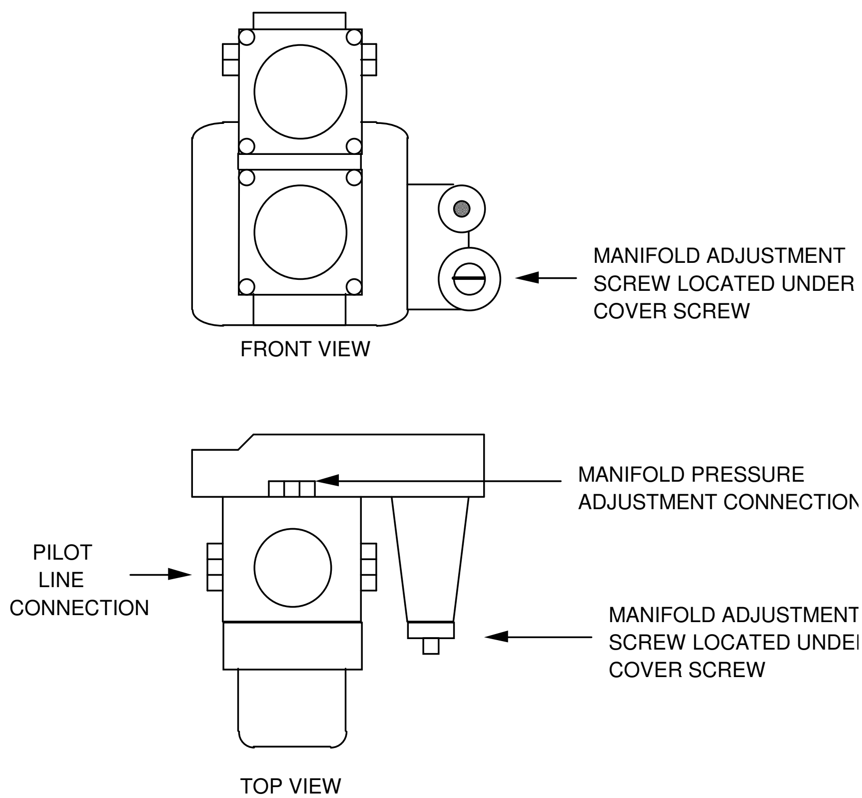
1. Shut off power at main breaker.
2. Remove front control compartment cover.
3. Remove air switch cover plate.
4. Disconnect wiring and mark for reassembly.
5. Loosen 2 screws and remove air switch.
6. Disconnect 1/4" air tube.
7. Reassemble in reverse order.
8. Turn on power and calibrate air switch as follows:
   Turn adjusting screw counter clockwise to full out position.
   Turn main fan and heat switch on.
   Turn adjusting screw clockwise until heat shuts off.
   Turn adjusting screw counterclockwise 1/4 turn and unit should heat.
   NOTE: Test as follows:
   Oven must be tested in heated condition.
   Remove main fan fuse. Main fan should shut down, deactivating air switch causing heat to shut off in approximately 5 to 25 seconds.

BURNER ASSEMBLY

1. Shut off power at main breaker.
2. Shut off gas supply.
3. Remove control panel top and front panel.
4. Remove gas control valve (See "GAS CONTROL VALVE")
5. Disconnect pilot tube.
6. Remove thermostat or solenoid valve.
7. Remove four (4) phillips screws that secure the burner backing plate.
8. Remove burner assembly from housing, the main and pilot orifice, flame target, pilot shield (main and extension), flame sensor, and burner ignitor can now be changed or serviced as needed.
9. Reassemble in reverse order.

GAS CONTROL VALVE

1. Shut off power at main breaker.
2. Shut off gas supply.
3. Remove control panel top and front cover.
4. Disconnect the gas piping from the back of the unit.
5. Remove the four-(4) screws from the incoming nipple mounting bracket.
6. Remove incoming nipple.
7. Remove pilot tube assembly from control valve.
8. Disconnect pipe union just above control valve.
9. Disconnect wiring from control valve making note of wire numbers and location.
10. Reassemble in reverse order - after assembly is complete be sure to check manifold pressure (3.5" W.C. NAT Gas/10" W.C. LP) and adjust if necessary. (See Section "MANIFOLD PRESSURE-ADJUSTMENT")
    NOTE: Check all gas line fittings for leaks after installation.



MANIFOLD PRESSURE - ADJUSTMENT

1. Remove control panel top and front cover.
2. WITH ELECTRIC POWER AND GAS OFF: remove the outlet pressure tap plug from the gas control valve and install the adapter fitting and manometer.
3. Turn on electric power and gas and start-up oven.
4. With oven at full fire, manifold pressure should be (3.5"W.C. NAT/10" W.C. LP).
5. Turn off electric power and gas, replace cover screw, remove manometer and adapter; replace pressure tap plug.
6. Check pressure tap for gas leaks before closing panel.
7. Close control panel and check system operation.

TEMPERATURE CONTROL VALVE (ROBERT SHAW)

1. Shut off power at main breaker
2. Shut off gas supply.
3. Remove control panel top and front cover.
4. Remove gas control valve (See Above).
5. Remove the two-(2) 3/8" x 16 nuts that hold main orifice bracket to the burner assembly.
6. Remove temperature control valve sensing bulb from oven cavity.
   NOTE: It may be necessary to remove conveyor and fingers from oven cavity.
7. Remove piping from old temperature control valve.
8. Reassemble in reverse order, be sure the sensing bulb is properly placed in the oven cavity. The sensing bulb is properly placed in the oven cavity when it is placed in the spring holder and positioned with the 5 1/2" of the bulb to the left of the spring holder.
   NOTE: The bypass screw should be adjusted all the way in.

SOLENOID VALVE

1. Shut off power at main breaker.
2. Shut off gas supply.
3. Remove control panel top and front cover.
4. Remove gas control valve (See "GAS CONTROL VALVE").
5. Disconnect wires from solenoid valve.
6. Remove two (2) 3/8" x 16 hex nuts that hold main orifice bracket in place.
7. Remove solenoid valve assembly.
8. Remove piping from solenoid valve.
9. Reassemble in reverse order.

TEMPERATURE CONTROL BOARD

GAS OVENS

1. Shut off power at main breaker.
2. Remove control panel top and front cover.
3. Remove relay box cover.
4. Disconnect wiring from temperature control board.
5. Make note of wire number and location for reinstallation.
6. Reassemble in reverse order.

ELECTRIC OVENS

1. Shut off power at main breaker.
2. Remove control panel top and front cover.
3. Disconnect wiring from temperature control board.
4. Make note of wire numbers and location for reinstallation.
5. Reassemble in reverse order.

TEMPERATURE CONTROL POTENTIOMETER – REPLACEMENT

1. Remove control panel top and front cover.
2. Remove one screw from control knob guard and move guard to one side.
3. Remove knob and locknut on control pot. shaft and push out.
4. Remove three (3) wires from temperature control board. Note wire numbers and location.
5. Reassemble in reverse order.

MERCURY CONTACTOR

1. Shut off power at main breaker.
2. Remove control panel top and front cover.
3. Disconnect contactor wires and mark for reinstallation.
4. Remove screws from mounting bracket and replace contactor.
   NOTE: Be sure contactor is not mounted upside down as this will cause a <u>constant</u> <u>on</u> condition.
5. Reassemble in reverse order.

THERMOCOUPLE- REPLACEMENT

1. Remove control panel top and front cover.
2. Remove cover from relay box.
3. Slide thermocouple out of oven chamber.
   NOTE: Remove conveyor and bottom fingers to aid in removal and installation of thermocouple.
4. Remove two (2) wires from temperature control board. Make note of wire numbers or color and location for reinstallation.
5. Reassemble in reverse order making sure the metal end on the thermocouple is securely in the wire form in the oven chamber.

THERMOCOUPLE MEASUREMENT CHART:

EXPLANATION: The junction temperature is the ambient air temperature where the thermocouple fastens to the electronic temperature control board.

			O	**V**	**E**	**N**		**T**	**E**	**M**	**P**	
		200°F	250°F	300°F	325°F	350°F	400°F	425°F	450°F	500°F	550°F	600°F
J	90°F	3.26	4.77	6.30	7.06	7.83	9.37	10.14	10.91	12.46	14.00	15.53
U	88°F	3.32	4.83	6.36	7.12	7.89	9.43	10.20	10.97	12.51	14.05	15.59
N	86°F	3.37	4.88	6.41	7.17	7.94	9.49	10.26	11.03	12.57	14.11	15.65
C	84°F	3.43	4.94	6.47	7.23	8.00	9.54	10.31	11.09	12.63	14.19	15.71
T	82°F	3.49	5.00	6.53	7.29	8.06	9.60	10.37	11.14	12.69	14.23	15.76
I	80°F	3.55	5.06	6.59	7.35	8.12	9.66	10.43	11.20	12.74	14.28	15.82
O	78°F	3.60	5.11	6.64	7.40	8.17	9.72	10.49	11.26	12.80	14.34	15.86
N	76°F	3.66	5.17	6.70	7.46	8.23	9.77	10.55	11.32	12.86	14.40	15.94
	75°F	3.69	5.20	6.73	7.49	8.26	9.80	10.57	11.35	12.89	14.43	15.97
	74°F	3.72	5.23	6.76	7.52	8.29	9.83	10.60	11.37	12.92	14.46	15.99
	72°F	3.78	5.29	6.82	7.58	8.35	9.89	10.66	11.43	12.97	14.51	16.05
T	70°F	3.83	5.34	6.87	7.63	8.40	9.95	10.72	11.49	13.03	14.57	16.11
E	68°F	3.89	5.40	6.93	7.69	8.46	10.00	10.78	11.55	13.09	14.63	16.17
M	66°F	3.95	5.46	6.99	7.75	8.52	10.06	10.83	11.61	13.15	14.69	16.23
P	64°F	4.01	5.52	7.05	7.81	8.58	10.12	10.89	11.66	13.20	14.74	16.28
	62°F	4.06	5.57	7.10	7.86	8.63	10.18	10.95	11.72	13.26	14.80	16.34
	60°F	4.12	5.63	7.16	7.92	8.69	10.24	11.01	11.78	13.32	14.86	16.40

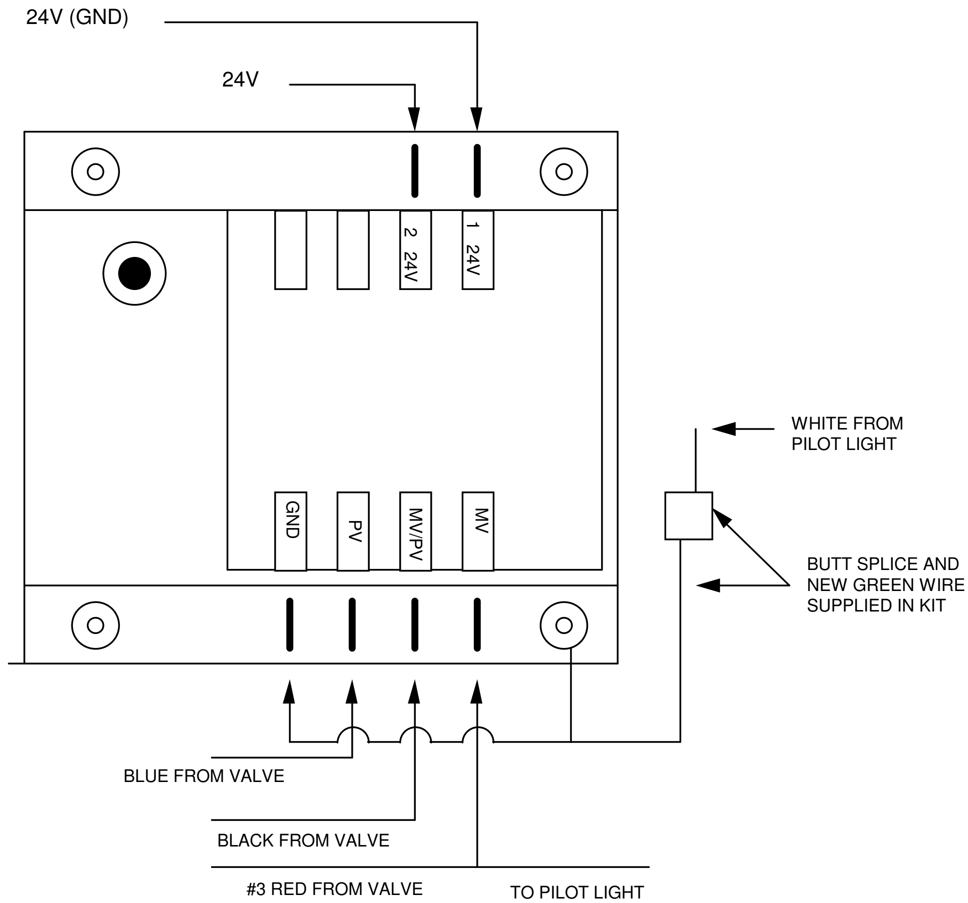
HEATING ELEMENT

1. Shut off power at main breaker.
2. Remove rear motor cover.
3. Disconnect heater element wire and mark for reassembly.
4. Remove oven back assembly.
   NOTE: For ovens SN 4768 and above, remove fan shroud.
5. Remove two (2) mounting screws and remove heating element.
6. Reassemble in reverse order.
   NOTE: Be sure the lead terminals are double nutted to the heating element and are tight
   If the leads are not attached in this manner, a loose connection may result, causing arcing and lead wire burn off.

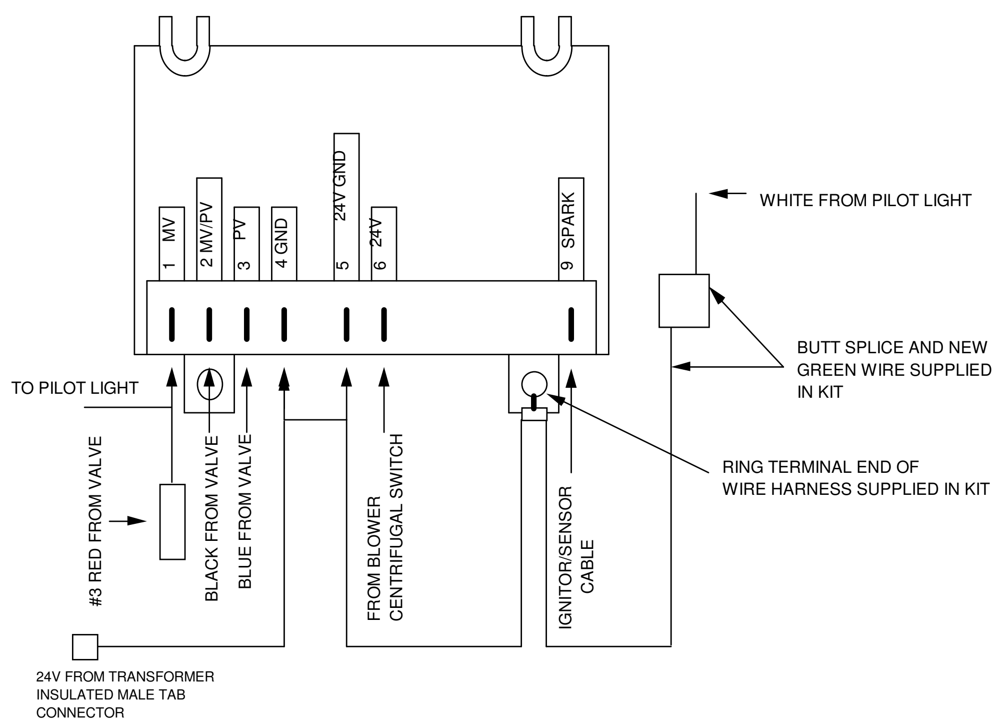
IGNITION CONTROL

NOTE: When replacing Johnson Controls, G-60 or G-65 Ignition Control with the new Honeywell Ignition control, the 24 VAC burner transformer (rated at 20VA) must be replaced with the larger (rated at 40VA) #369531 Transformer.

1. Read all instructions supplied in kit before starting.
   Tools required: Center punch and 7/32" drill bit.
2. Shut off power at main breaker.
3. Remove control panel top and front panel.
4. Remove front panel.
5. Remove ignition control package from Johnson gas valve and discard.
   The white flame sensor wire, from the burner to terminal #4 on Johnson gas control is no longer used. Cut Wire at burner and discard.
   NOTE: On some Impinger ovens, it may be necessary to drill the mounting holes through the oven specification plate. Use care to avoid drilling through any important information or agency approval markings on the specification plate.
6. Use template supplied to locate and drill two (2) 7/32" mounting holes for new Ignition Control. When mounting new ignition control, make certain that the green #67 ground wire (supplied) is installed properly.
7. Connect wiring as follows:
   Connect blue wire from gas valve to terminal marked P.V. on ignition control.
   Connect black wire from gas valve to termainal marked M.V./P.V. on ignition control.
   Connect red wire from gas valve to terminal marked M.V. on ignition control.
   Connect white wire from indicator light to ground, by using splice connection on green wire supplied.
   Connect orange spark lead from burner to terminal marked "spark" on ignition control.
   NOTE: It may be necessary to replace ignition cable terminal with .250" quick-connect terminal (supplied).
   Connect the red wire from burner blower motor centrifugal switch to terminal marked 24V on ignition control.
   Connect green #68 wire (supplied) from terminal 24 GND to terminal GND (burner) to ground.
   Connect the green wire from 24VAC transformer to wire #68 at terminal marked 24V(GND) on ignition control.
   The Honeywell ignition control module provides 100% safety lockout. Control will try for ignition for 15 seconds. If ignition does not occur, control will lockout or shut off. To reset control, the burner switch must be turned off for 1 minute.



24V (GND)
24V
2 24V
1 24V
GND
PV
MV/PV
MV
WHITE FROM PILOT LIGHT
BUTT SPLICE AND NEW GREEN WIRE SUPPLIED IN KIT
BLUE FROM VALVE
BLACK FROM VALVE
#3 RED FROM VALVE
TO PILOT LIGHT



1 MV
2 MV/PV
3 PV
4 GND
5 24V GND
6 24V
9 SPARK
WHITE FROM PILOT LIGHT
BUTT SPLICE AND NEW GREEN WIRE SUPPLIED IN KIT
TO PILOT LIGHT
RING TERMINAL END OF WIRE HARNESS SUPPLIED IN KIT
#3 RED FROM VALVE
BLACK FROM VALVE
BLUE FROM VALVE
FROM BLOWER CENTRIFUGAL SWITCH
IGNITOR/SENSOR CABLE
24V FROM TRANSFORMER INSULATED MALE TAB CONNECTOR

FLAME SENSOR

1. Shut off power at main breaker.
2. Remove control panel top and front cover.
3. Remove burner assembly (see burner assembly).
4. Disconnect one (1) wire from flame sensor.
5. Remove flame sensor by removing one (1) mounting nut.
6. Reassemble in reverse order.
   NOTE: Be sure flame sensor is not bent or touching any other burner parts.

BURNER IGNITOR

1. Shut off power at main breaker.
2. Remove control panel top and front cover.
3. Remove burner assembly.
4. Remove flame sensor.
5. Remove pilot shield and pilot shield extension.
6. Remove burner igniter.
7. Reassemble in reverse order.
   NOTE: Be sure to reconnect burner igniter cable to ignition control.

TRANSFORMER 120/24 VAC

1. Remove control panel top and front cover.
2. Remove control box cover from burner blower motor.
   NOTE: The complete burner blower motor assembly, with control box (PN 369359), is no longer available. The blower motor assembly (PN 369265) has been changed to a burner motor kit (PN 369366). If the burner blower motor or 24V transformer (PN 369531) are replaced, the following modifications must be made:
3. Shut off power at main breaker.
4. Remove control box and components from burner blower motor.
5. Mount transformer on air switch bracket (use transformer as template).
6. Discard control box and relay. Material needed: #29 drill bit and #8 x 3/8" self tapping screws (3 each)
7. See Burner blower motor section for wiring information.
8. Replace covers and check system operation.

BURNER LIGHT (24 VAC) - GAS OVENS

1. Shut off power at main breaker.
2. Remove control panel top and front panel.
3. Remove access cover.
4. Remove two wires from burner light, note number and location.
5. Grasp body of light assembly and slide sideways to remove.
6. Reassemble in reverse order and check.

HEAT LIGHT (125 VAC) - ELECTRIC OVENS

1. Shut off power at main breaker.
2. Remove control panel top and front panel.
3. Remove two (2) wires from heat light, note number and location.
4. Grasp body of light assembly and slide sideways to remove.
5. Reassemble in reverse order and check.

THERMOSTAT, HI-LIMIT - ELECTRIC OVENS

1. Shut off power at main breaker.
2. Remove control panel top and front cover.
3. Remove the two-(2) wires from the thermostat located on the back wall of the control box.
4. Remove two (2)-mounting screws.
5. Reassemble in reverse order.
   NOTE: Be sure to press red "reset" button on new thermostat to ensure that it is in the "closed" position.

PILOT ORIFICE - BURNER

1. Shut off power at main breaker.
2. Shut off gas supply.
3. Remove burner assembly (see Burner Assembly).
4. Remove pilot line from pilot orifice.
5. Remove pilot orifice from burner igniter.
6. Reassemble in reverse order.

MAIN ORIFICE - BURNER

1. Shut off power at main breaker.
2. Shut off gas supply.
3. Unbolt temperature control valve assembly (see Temperature Control Valve) and carefully rotate to access main orifice bracket.
   NOTE: Be sure not to damage capillary tube.
4. Remove main orifice from orifice bracket.
5. Reassemble in reverse order.
6. Check all gas fittings for leaks.

POTENTIOMETER - CONVEYOR SPEED CONTROL

1. Shut off power at main breaker.
2. Remove control panel top and front panel.
3. Remove conveyor speed control dial.
4. Remove mounting nut from pot. shaft.
5. Remove pot. from front panel.
6. Disconnect pot. wiring from conveyor control board.
7. Remove pot. assembly.
8. Reassemble in reverse order.

DIAL, CONVEYOR SPEED CONTROL (NON-DIGITAL DISPLAY OVENS)

1. Shut off power at main breakers.
2. Remove dial by loosening set screws.
3. Set new dial indicator to "000" in window and lock.
4. Turn speed control pot. shaft to its minimum speed position.
5. Slide dial assembly onto pot. shaft and tighten set screw.

DIAL, CONVEYOR SPEED CONTROL (OVEN WITH DIGITAL DISPLAY)

1. Shut off power at main breaker.
2. Remove old dial by loosening set screw.
3. Remove shaft locking nut.
4. Install new shaft locking nut.
   NOTE: This is a friction type locking nut do not try to trim this nut to fit.
5. Install new dial by sliding over pot. shaft and tightening set screw.

CONVEYOR MOTOR REPLACEMENT - BODINE (SN 100-4389)

1. Shut off power at main breaker.
2. Remove control panel top and front panel.
3. Remove the conveyor drive chain from the motor sprocket.
4. Remove chain guard.
5. Remove the sprocket from the conveyor motor shaft by loosening the set screws and sliding the sprocket off the shaft.
6. Unplug the conveyor motor wiring harness.
7. Remove the four (4) mounting bolts and nuts.
8. Reassemble in reverse order and calibrate the conveyor D. C. control board (See D. C. Motor Control Board - Calibration, Bodine System).

CONVEYOR MOTOR REPLACEMENT - BALDOR
1000 SERIES SN 4390 - 14974
1200 SERIES SN 4390 – 14791

1. Shut off power at main breaker.
2. Remove control panel top and front cover.
3. Remove the conveyor drive chain from the motor sprocket.
4. Remove chain guard.
5. Remove the sprocket from the conveyor motor shaft by loosening the set screws and sliding the sprocket off the shaft.
6. Unplug the wiring harness for the motor.
7. Disconnect the red and black wires from the terminals on the tach. generator which is mounted on the top of the D.C. conveyor motor. Note which terminal the red and black wires are attached to. (Reversing the polarity will cause motor to run wide open with no control from the speed pot.)
8. Remove the four (4) mounting bolts.
9. Remove dust cover, remove tach., tach. bracket, coupling, and optical encoder assembly for reinstallation on new motor assembly. (See page 82)
10. Reassemble in reverse order and calibrate in the conveyor D. C. control board (See D. C. Motor Control Board - Calibration).

CONVEYOR MOTOR REPLACEMENT - STEPPER
1000 SERIES SN14975 AND ABOVE
1200 SERIES SN14792 AND ABOVE

1. Shut off power at main breaker.
2. Remove control panel top and front cover.
3. Remove the chain guard.
4. Remove the conveyor drive chain from the motor sprocket.
5. Remove the sprocket from the conveyor motor shaft by loosening the set screw and sliding the sprocket off the shaft.
6. Unplug the wire harness for the motor.
7. Unplug the wire harness for the hall effect sensor (mounted on motor) from the conveyor speed control.
8. Remove the four (4) mounting bolts and washers.
9. Reassemble in reverse order and calibrate the control board. (See Stepper Control-Adjustment)
   NOTE: New drive motors will come as an assembly with Magnet and Hall Effect Sensor. The magnet and sensor will also be available as a replaceable spare part. (When replacing the magnet be sure to clean shaft and locate new magnet up against the shoulder on the shaft.)

COUPLING AND ENCODER DISC

1. Shut off power at main breaker.
2. Remove conveyor motor assembly.
3. Remove dust cover above motor.
4. Loosen both allen set screws (.050 inch allen wrench) located on coupling hub.
5. Remove 3 screws from tach. bracket, loosen the 4th.
6. Remove encoder assembly, see optical encoder assembly in following procedure. Pushing coupling down on motor shaft. Swivel tach. bracket aside and remove coupling. To install, push coupling on to motor shaft. The encoder disc must be nearest motor.
7. Refasten tach. bracket in proper alignment.
8. Tighten the set screw on the tach. side first maintaining the .010 minimum dimension between the coupling hub and tach.
9. Pull the coupling apart (approximately 1/8",3.2mm) and fasten the motor side set screw. If the optical encoder was loosened, refer to optical encoder in this section for adjustment.
   NOTE: The thin, slotted encoder disc must be handled with care so not to bend it.
10. Recheck tightness on the set screws to be sure they are tight. If available, LOC TITE (the removable kind) should be used to secure set screws.

OPTICAL ENCODER ASSEMBLY

1. Shut off power at main breaker.
2. Remove conveyor motor assembly .If replacing with new assembly, cut wires to remove as new wires and plug are provided. If only removing for access to coupling follow step 4.
3. Remove pins from connectors with pin extractor tool, P/N 369600.
4. Loosen dust cover screws and pull dust cover away from motor.
5. Remove 2 screws from optical encoder and remove encoder.
6. Reassemble in reverse order. To adjust optical encoder: Position the encoder assembly so it does not rub the coupler hub and is square with the encoder disc. The infrared light beam will be broken by slots in the encoder disc. The encoder disc should not touch the bottom or top of the optical encoder. If it does readjust the coupling. The digital speed readout may be observed to check proper adjustment of the optical encoder assembly.

TACH. GENERATOR

1. Shut off power at main breaker.
2. Remove conveyor motor assembly .
3. Remove tach. cover plate and tach. leads. Mark lead position.
4. Remove 2 slotted screws from dust cover base and remove dust cover.
5. Loosen coupling set screw (.050 inch allen wrench).
6. Remove tach. bracket from motor.
7. Remove 4 screws from base of tach. and tach. is now free for removal.
8. Reassemble in reverse order. Maintain spacing of .010 minimum between tach. Bracket and coupler hub.
   NOTE: If a new tach. generator is installed, the D.C. motor control board MUST BE RECALIBRATED There is no repair procedure for the tach. If defective, replace.

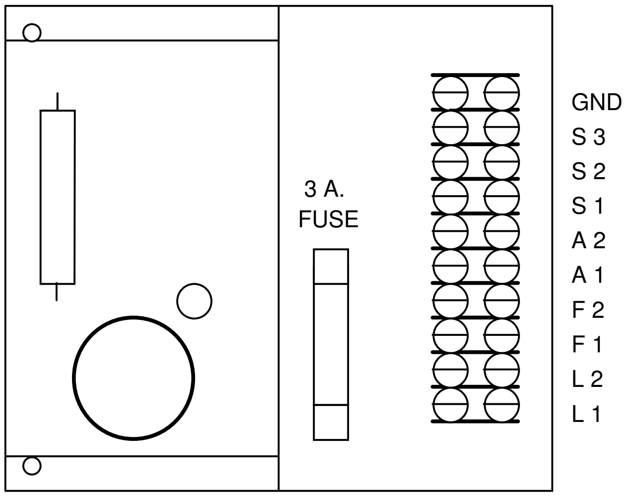
CONVEYOR MOTOR CONTROL BOARD

1. Shut off power at main breaker.
2. Remove control panel top and front cover.
3. Remove cover from relay box.
   SN 100-4389 BODINE SYSTEM
   Remove wires from terminal strip on control board making sure to mark wires so they will be reinserted on the proper terminal.
   Remove the four (4) hex head screws.
   Reassemble in reverse order and calibrate (See D. C. Motor Control Board - Calibration, Bodine System)
   SN 4390-14974 1000 SERIES GAS OVENS
   SN 4390-14791 1200 SERIES GAS OVENS
4. Make note of wire number and location before removing them from the control board.
   POLARITY BETWEEN, T1-T2 AND A+ AND A- IS CRITICAL. The bottom mounting screw need only be loosened as the mounting bracket for the control board is slotted. Remove top two (2)mounting screws and remove control board.
   NOTE: Exchange boards on the mounting bracket before reinstallation.
5. Reassemble in reverse order and calibrate (See D. C. Motor Control Board - Calibration)
   SN 14975 AND ABOVE 1000 SERIES GAS OVENS
   SN 14792 AND ABOVE 1200 SERIES GAS OVENS
   Make note of wire numbers and location before removing them from the control board.
6. The bottom mounting screw need only be loosened as the mounting bracket for the control board is slotted. Remove top two (2) mounting screws and remove control board.
7. Reassemble in reverse order and calibrate. (See Stepper Control-Adjustment)

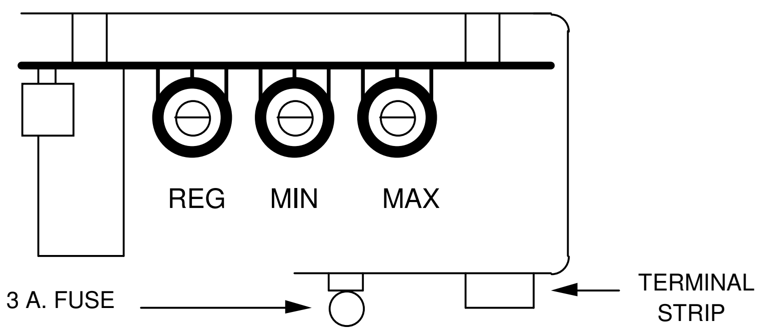
D. C. MOTOR CONTROL BOARD - CALIBRATION
SN 100 to 4389 - BODINE SYSTEM

1. Remove control panel top and front cover.
2. Remove cover from relay box.
3. Identify D. C. control board and calibrate as per the following instructions:
   NOTE: THE USE OF A DIGITAL VOLTMETER IS NECESSARY FOR PROPER ADJUSTMENT
   Check incoming AC voltage at L1 and L2. Should be 120 VAC ± 10%.
   Check field voltage at terminals F1 and F2. Should be 100 VDC ± 10 volts.
   Turn speed control dial clockwise to its maximum speed position.

PLACE DIGITAL VOLTMETER LEADS ON terminal S1 and S2, adjust the max pot. for a reading of 3.4 VDC.
Place METER LEADS on terminals A1 and A2. Adjust the reg. pot. for a reading of 125 VDC.
NOTE: In some instances when the input AC voltage runs on the high side of the normal input range, you may have difficulty adjusting the max. pot. for a reading of 3.4 VDC. In this instance, a reading of 3.45 VDC is acceptable.
Adjust speed pot to obtain the proper time setting for the conveyor to meet customers desired speed .
Check conveyor travel in a no load situation to insure conveyor belt is traveling at a constant speed.



D. C. CONTROL BOARD "BODINE" S/N 100-4389



D. C. CONTROL BOARD "BODINE" S/N 100 4389
(TOP VIEW)

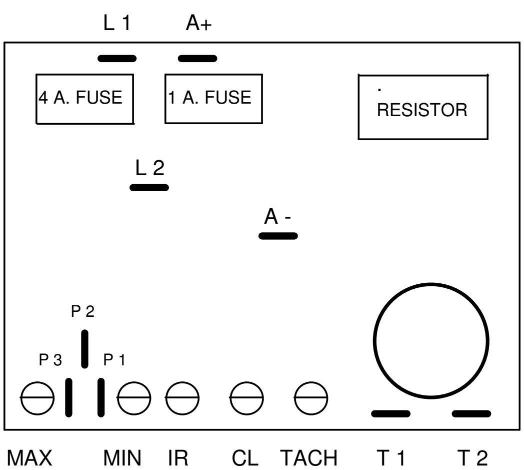
D. C. MOTOR CONTROL BOARD
SN 4390 - 14974 1000 SERIES GAS OVENS
SN 4390 - 14790 1200 SERIES

Three different styles of control boards have been used and all three are still usable. All three were supplied under the same part number.

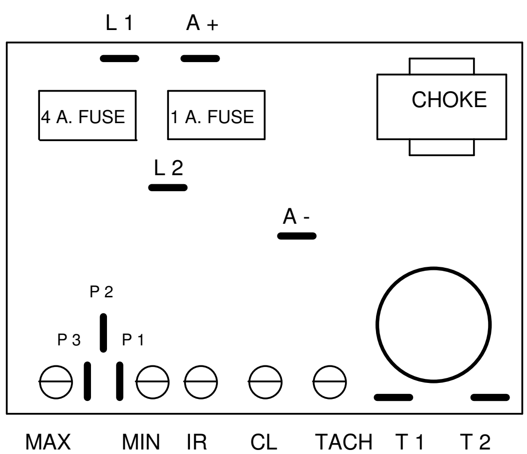
STYLE 1 CONTROL BOARD ADJUSTMENT

NOTE: A digital meter must be used for this adjustment.
Voltage at L1 and L2 terminals of the control board is to be 120 VAC ± 10%
Connect a digital volt meter to terminals A+ and A-, set meter on 200 VDC scale.
Turn speed control pot. (on oven control panel) to its maximum speed setting.
Turn "MAX", "MIN", and "IR" pots counter clockwise until they stop (DO NOT turn CL pot.)
Adjust "TACH" pot. so the volt meter indicates 110 VDC ± 0.5 volts.
Adjust "IR" pot. to read between 1.5 and 2 VDC above tach. reading.
(Example: If tach. reading would be 110.3 then adjust IR to between 111.8 VDC and 112.3 VDC)
Turn speed control pot. to its minimum speed setting.
Adjust "MIN" pot. so the voltmeter indicates between 2 and 6 VDC.

Turn speed control dial to obtain a reading of 22 VDC on your meter. Observe for approximately 30 seconds to see if stable within ± 0.5 VDC. Repeat at 35 VDC.
Check speed of conveyor and adjust time/temp. display if necessary.
Seal pots with Glyptol or nail polish.



BOARD P/N 369155
STYLE 1



" B " BOARD P/N 369272

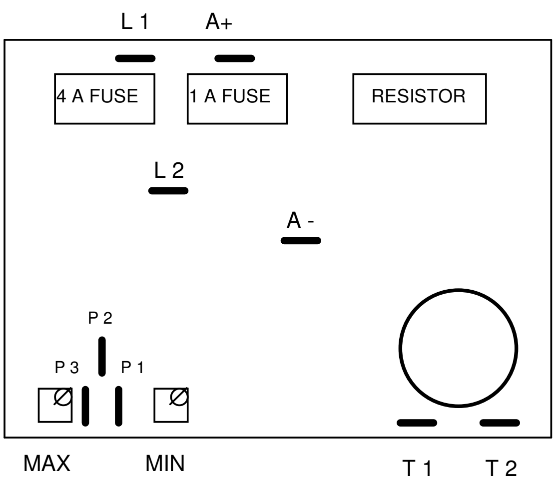
STYLE 2 AND STYLE 3 CONTROL BOARD ADJUSTMENT

NOTE: A digital meter must be used.
Voltage at L1 and L2 terminals of the control board is to be 120 VAC± 10%.
Connect a digital voltmetet to terminal T1 and T2, set the meter on DC scale.
Turn speed control pot. (on oven control panel) to its maximum speed setting.
Adjust the "MAX" pot. so the voltmeter indicates 22.6 to 22.8 VDC.
Turn the speed control pot. to its minimum speed setting.
Adjust the "MIN" pot. so the voltmeter indicates 1.4 to 1.5 VDC.
Reset the speed control pot. to its maximum speed setting and check if voltage is still at 22.6 to 22.8 VDC. Readjust if necessary.

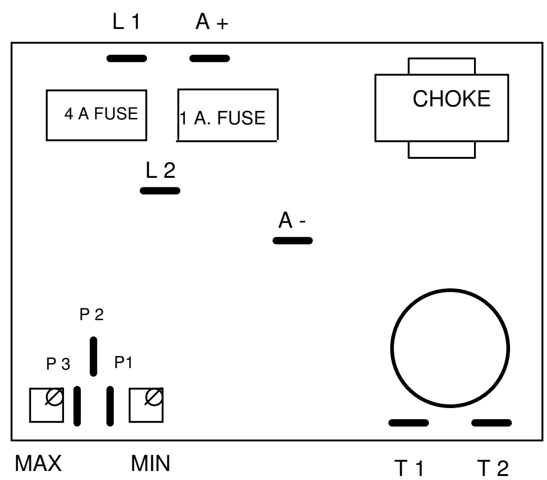
Reset the speed control pot. to its maximum speed setting and check if voltage is still at 1.4 to 1.5 VDC. Readjust if necessary.
If readjustment of either the "MAX" or "MIN" pot. was necessary, the opposite must always be

checked until both "MIN" and "MAX" are in proper adjustment.
Measure the speed of the conveyor and adjust the time/temp. display if necessary.
Seal pots with Glyptol or nail polish.

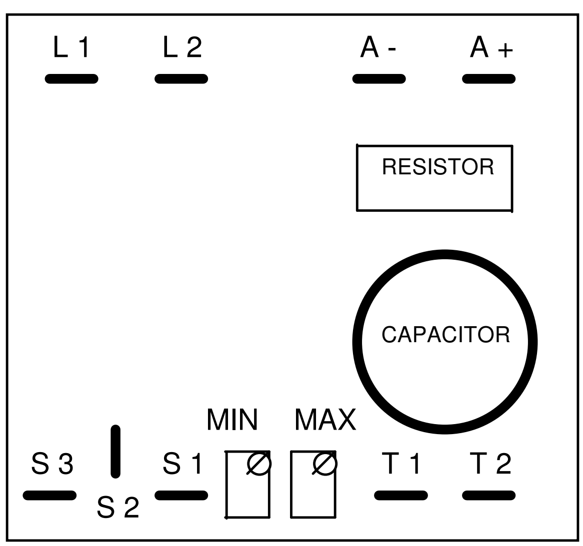
NOTE: Occasionally a new board (Style 2 and 3 only) is so far out of adjustment that you will be unable to adjust the correct voltage. To correct, turn both the "MAX" and "MIN" pots 10 turns in either direction and then 5 turns in opposite direction. This will center the pots and allow them to be calibrated. If after this procedure, the board will not adjust, it is probably defective.



BOARD P/N 369155
STYLE 2

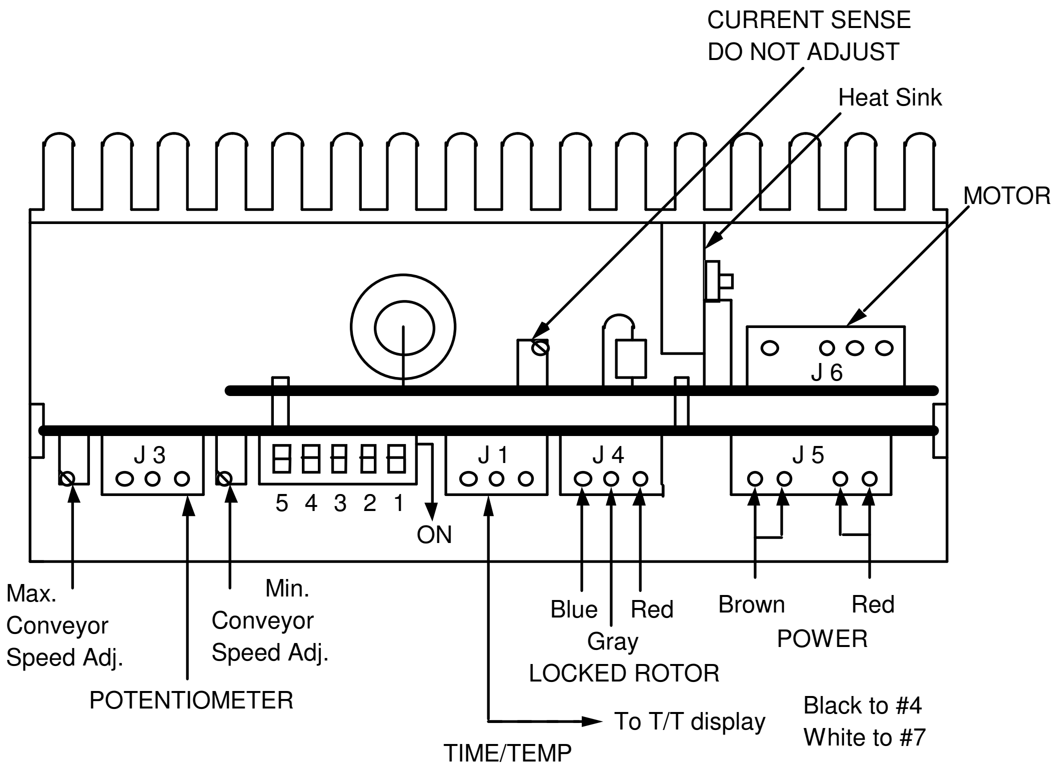


" B " BOARD P/N 369272



BOARD P/N 369155
STYLE 3

STEPPER CONTROL - ADJUSTMENT
S/N 14975 AND ABOVE 1000 SERIES GAS OVEN
S/N 14792 AND ABOVE 1200 SERIES GAS OVEN



1. With power off, the five (5) dip switches located on the conveyor control (see drawing above) should be set as below.

DIP SWITCHES

CONTROL	1	2	3	4	5
SWITCH POSITION	OFF	OFF	ON	OFF	OFF

2. With power off, the ten (10) dip switches located on rear of Time/Temp Display (see drawing on page 52) should be set as below.

DISPLAY	1	2	3	4	5	6	7	8	9	10
SWITCH POSITION	OFF	*	*	ON	OFF	OFF	ON	ON	OFF	ON

*SWITCH 2 - OFF FOR 60HZ, ON FOR 50HZ
*SWITCH 3 - OFF FOR °F, ON FOR °C

3. With conveyor running, set conveyor speed control so Time/Temp. Display indicates 5:00 minutes. Place a pan on the conveyor, measure (STOPWATCH) the time (SPEED OF PAN) of the leading edge in to leading edge out of oven. Turn the speed adjustment pot. on the rear of the Time/Temp. Display so display agrees with time measured by the stop watch. (See drawing on page 52).
4. Turn conveyor speed control fully counterclockwise and adjust the stepper control maximum speed pot (refer to drawing above) so the display indicates 50 seconds.
5. Turn conveyor speed control fully clockwise and adjust the stepper control minimum speed pot so the display indicates 30 minutes.
   NOTE: Repeat 4 and 5 to be sure settings are accurate.
6. Turn power off and set #1 dip switch to its (ON/OFF) other position and verify that the conveyor reverses direction when power is applied. Set conveyor travel direction as customer requests.
   CAUTION: ALWAYS REMOVE POWER BEFORE CHANGING CONVEYOR DIRECTION.

REVERSING CONVEYOR DIRECTION
SN 100-4389 (BODINE)

1. Shut off power at main breaker.
2. Remove control panel top.
3. Turn reversing switch (located on relay box) to obtain desired belt direction.
4. Reassemble in reverse order.

SN 4390-14974 1000 SERIES GAS OVEN
SN 4390-14791 1200 SERIES

All ovens leaving our plant are wired to operate conveyors from left to right. To reverse conveyor direction, use the following procedure.

1. Shut off power at main breaker.
2. Remove control panel top.
3. Remove cover from relay box.
4. Reverse wires fastened to terminals A+ and A-.
5. Reverse wires fastened to terminals T1 and T2. Both set of leads must be reversed or oven will run at maximum speed with no speed adjustment possible.

STEPPER DRIVE SYSTEM
SN 14975 AND ABOVE 1000 SERIES GAS OVEN
SN 14792 AND ABOVE 1200 SERIES

1. Shut off power at main breaker.
2. Remove control panel top.
3. Remove relay box cover.
4. Change position of dip switch #1 on stepper control board.
5. Reassemble in reverse order.

MINI CIRCUIT BREAKER

1. Shut off power at main breaker.
2. Remove control panel top and front panel.
3. Disconnect two (2) wires from circuit breaker.
4. Remove knurled mounting nut and remove.
5. Reassemble in reverse order.

NOTE: Be sure to reset breaker before operating.

BEARING, CONVEYOR
SN 100-2163

1. Remove conveyor from oven and place of flat surface.
2. Remove connecting links from conveyor belting. See Installation and Operting Instructions Manual.
3. Remove conveyor belting from conveyor.

DRIVE END

4. Remove drive sprocket from drive shaft.
5. Remove drive shaft from end of conveyor frame.
6. Remove bearing retaining clips from ends of drive shaft.
7. Slide bearing off drive shaft.
8. Reassemble in reverse order.

IDLER END

4. Remove idler shaft from end of conveyor frame.
5. Slide bearing off idler shaft.
6. Reassemble in reverse order.

BEARING, CONVEYOR
SN 2164 AND ABOVE

1. Remove conveyor from oven and place on a flat work surface.
2. Remove connecting links from conveyor belting. See Installation and Operating Instructions Manual .
3. Remove conveyor belting from conveyor

DRIVE END

4. Remove drive sprocket from drive shaft.
5. Remove two (2) allen head bolts.
6. Remove drive shaft and bearing assembly from conveyor frame.
7. Reassemble in reverse order.

IDLER END

4. Remove idler shaft/bearing/mounting plate assembly from conveyor frame.
5. Remove bearing/mounting plate assembly from conveyor.
6. Remove bearing from mounting plate.
7. Reassemble in reverse order.

TRANSFORMER-STEPPER MOTOR CONTROL

1. Shut off power at main breaker.
2. Remove control panel top and front cover.
3. Disconnect transformer wire harness.
4. Remove two (2) mounting screws.
5. Reassemble in reverse order.

HALL EFFECT SENSOR – REPLACEMENT

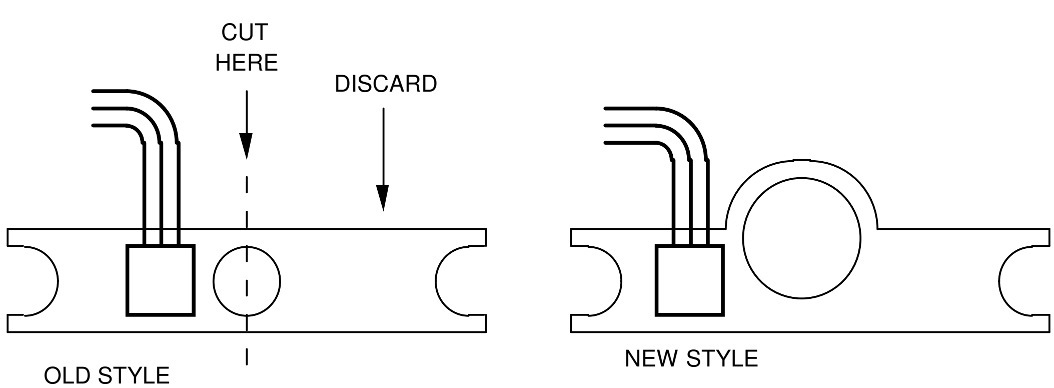
NOTE: There are two (2) styles of hall effect sensors - (See Drawing).

OLD STYLE

Remove two (2) screws from conveyor drive motor and break away hall effect sensor from motor shaft. To install new sensor, cut sensor bracket through center hole and install sensor half with one (1) screw. Reinstall plug on conveyor control.

NEW STYLE

Remove two (2) mounting screws and remove sensor from conveyor motor. Reinstall in reverse order.



TEMPERATURE GAUGE - REPLACEMENT

1. Shut off power at main breaker.
2. Remove control panel top.
3. Disconnect thermocouple from temperature gauge.
4. Remove two (2) mounting bolts and remove temperature gauge.
5. Reassemble in reverse order.

THERMISTOR - REPLACEMENT

1. Shut off power at main breaker.
2. Remove control panel top.
3. Slide thermistor probe out of oven chamber.
   NOTE: Remove conveyor and bottom fingers to aid in removal and instaliaticn of thermistor probe.
4. Disconnect wires from back of digital display at terminal strip (location #9-10).
5. Reassemble in reverse order making sure the probe is placed securely in the wire form in the oven chamber.
6. Reconnect to digital display and calibrate. (See Time/Temperature Display - Replacement and Calibration)

To test the thermistor probe, refer to the following chart and instructions

OVEN TEMPERATURE

	300º F	325º F	350º F	400º F	425º F	450º F	500º F	550º F
OHMS	182	138	102	62	48	38	24	16

Place test pyrometer thermocouple and preheat oven as specified under temperature calibration. Disconnect the thermistor probe from terminals 9 and 10 and measure the resistance across the 2 yellow leads. Refer to the above chart to determine if probe is producing the proper resistance.
EXAMPLE: The probe resistance at 500°F(260°C) should be 24 ohms.

TRANSFORMER, TIME/TEMP. DISPLAY

1. Shut off power at main breaker.
2. Remove control panel top.
3. Remove relay box cover.
4. Disconnect two (2) wires at base of transformer and three (3) wires at terminals 1,2, and 3 on Time/Temp Display.
5. Remove two (2) mounting screws.
6. Reassemble in reverse order.

TIME/TEMPERATURE DISPLAY - REPLACEMENT & CALIBRATION

1. Shut off power at main breaker.
2. Remove control panel top.
3. Disconnect wires from rear of display. Make note of wire numbers and location for reinstallation.
4. Remove four (4) screws from display bezel (2 top/2 bottom) and remove display.
5. Install new display in reverse order. Note dip switch position and calibrate display as follows:
   a) Check all wire connections to insure proper tightness.
   b) Check dip switch setting to insure proper positions for the model of oven:

ALL 1000 & 1200 SERIES OVENS

SWITCH SETTINGS

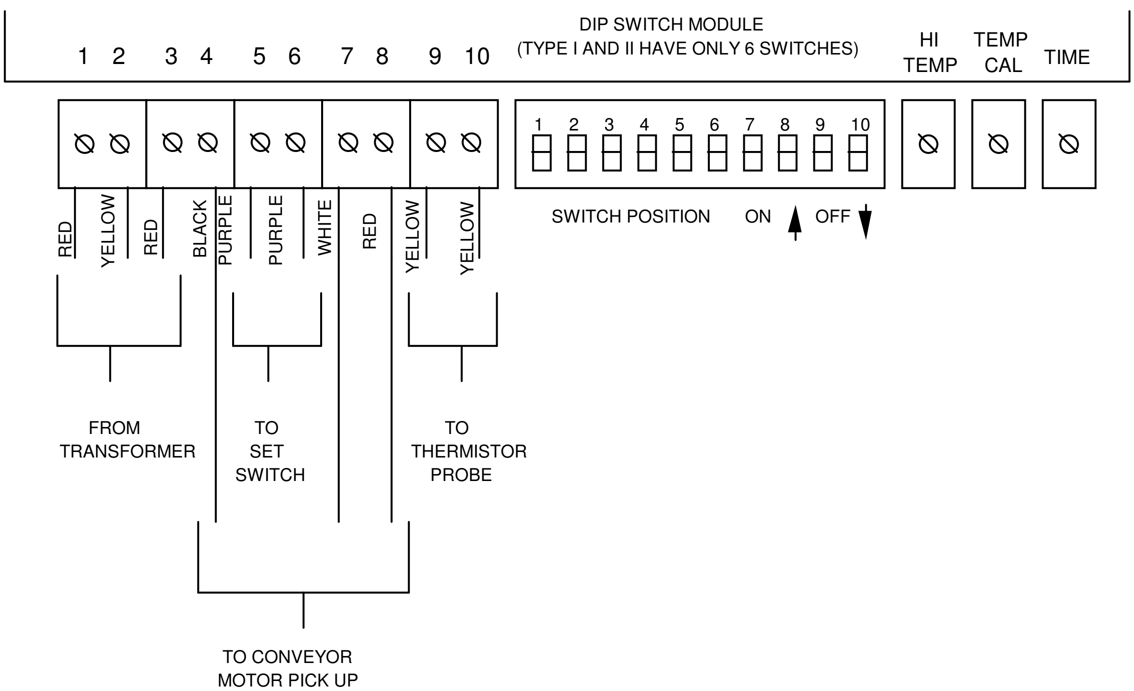
	1	2	3	4	5	6	7	8	9	10
TYPE I	OFF	OFF*	ON	ON	ON	OFF**				
TYPE II	OFF	OFF*	OFF**	ON	ON	ON				
TYPE III (Baldor Motor)	OFF	OFF*	OFF**	ON	OFF	ON	ON	ON	OFF	ON
TYPE III (Stepper Motor)	OFF	OFF*	OFF**	ON	OFF	OFF	ON	ON	OFF	ON
TYPE IV (Baldor Motor)	OFF	OFF	**	ON	OFF	ON	ON	ON	OFF	ON
TYPE IV (Stepper Motor)	OFF	OFF	**	ON	OFF	OFF	ON	ON	OFF	ON

*These switches are for Hertz settings (OFF=60HZ) & (ON=50HZ)
**These switches are for temperature read-out (OFF=Degrees F) & (ON=Degrees C)

c) Turn power on.

d) Calibrate time:
Place an object on the conveyor belt and time with a stopwatch, the elapsed time for the object to travel through the oven. (Leading edge in to leading edge out.)
Push in and hold the set button.
Adjust the time calibration pot on the rear of the module until the display numbers match the measured time. Seal adjustment pot. with Glyptol or nail polish.

e) Calibrate temperature:
Place a temperature sensor in between top two fingers and set temperature control to 500°F; allow temperature to stabilize.
"Fine Tune" temperature setting to achieve measured temperature swings from 497°F to 503°F. So if actual temperature falls between 497°F and 503°F the display must show 500°F. Adjust temperature calibration pot to achieve a display reading of 500°F(260°C).

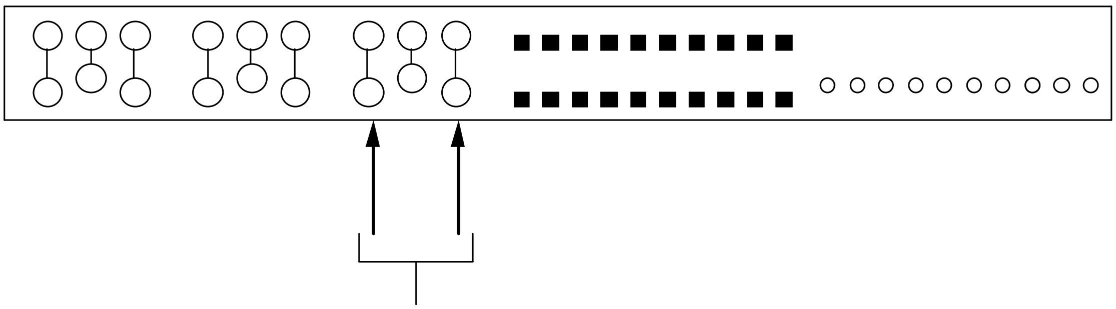


To identify the module, measure the width of the case.

Type I is 51/8 inches wide
Type II is 5 5/8 inches wide
Type I & II have a 6 position dip switch module.
Type III has a 10 position dip switch module.
Type IV is 5 5/8 inches wide x 3 ¼ inches deep

Type IV has adjustment pots. In the center board.
If temperature is still inaccurate after above calibration and troubleshooting, use the following to check the High Temp. Pot. normally the High Temp. Pot. does not require adjustment. Occasionally the pot is accidentally moved or needs adjustment. Refer to the following drawing showing proper adjustment of the High Temp. Pot.

BOTTOM OF TIME TEMP DISPLAY



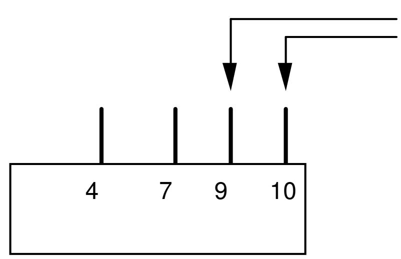
test leads here
reading should be 26 ± .5 ohms if not, adjust.
pot. range 0-34 ohms

SWITCH, DISPLAY, SET

1. Shut off power at main breaker.
2. Remove control panel top.
3. Disconnect wires from time/temp. display terminals 5 and 6.
4. Pull off black operating knob and remove hex mounting nut.
5. Reassemble in reverse order.

PROCEDURE FOR USE OF TIME/TEMP. SIMULATOR

<u>NOTE: DO NOT CHANGE HI TEMP POT.</u>



Check incoming power to display at Terminals 1, 2, and 3. Approximately 13 VAC at 1-3, 6.5 VAC at 1-2, 6.5 VAC at 2-3.
WithpowerOFF,removeleadsfrom4,5,6,7,8,9,and10.Installtime/temp.simulator to terminals 4,7,9,10.
To identify display type: (MEASURE WIDTH OF COVER ON DISPLAY)
Type I is 51/8 inches wide.
Type II is 5 5/8 inches wide.
Type I & II have a 6 position dip switch module.
Type III has a 10 position dip switch module.

Dip Switch

	1	2	3	4	5	6	7	8	9	10
TYPE I	OFF	OFF	OFF	ON	OFF	OFF				
TYPE II	OFF	OFF	OFF	OFF	OFF	OFF				
TYPE III	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	ON

NOTE: When on 50 HZ power, dip switch #2 must be "ON"
With power ON turn time and temperature cal. pot. fully counterclockwise.
Display should read: (Wait 15-20 seconds)
TYPE I 9:30 ± 10 sec.475 ± 10°F
TYPE II 9:20 ± 10 sec. HHH
TYPE III 9:35 ± 10 sec. 635 ± 10°F
Turn time and temp. cal. pot. fully clockwise.
Display should read: (Wait 15-20 seconds)
TYPE I 10:20 ± 10 sec. 615 ± 10°F
TYPE II 10:10 ± 10 sec. 475 ± 10°F
TYPE III 10:20 ± 10 sec. 475 ± 10°F
Turn time pot. to 10:00 minutes and temp. pot. to 540°F.
Time reading 10:00 ± 5 seconds.
Temperature reading should be steady at 540°F ± 10°F.
If these readings are not achieved, replace display.
NOTE: After simulator test is completed, the oven Time/Temperature Display must be re-calibrated.

SWITCH REPLACEMENT (FAN, HEAT, CONVEYOR)

1. Shut off power at main breaker.
2. Remove control panel top and front cover.
3. Remove switch access cover.
4. Depress the spring clips on the sides of the switch and push out.
5. Remove wires from back of switch. Note wire number and location.
6. Install new switch in reverse order and check.

SWITCH REPLACEMENT - (FAN SWITCH UPDATE)

INSTALLATION OF DOUBLE POLE FAN SWITCH #369260 IN PLACE OF SINGLE POLE FAN SWITCH #350705

NOTE: This change is not necessary for proper operation of oven nor is it permissible to change under warranty. Should be changed only at customer's request and their agreement to pay your bill.

ADVANTAGE: Allows time/temp. display, in older models, to operate same as current production models. Also allows locked time/temp. display (caused by voltage surge, interruption or spike) to be reset by fan switch rather than circuit breaker.

IDENTIFICATION: To determine which fan switch you have, observe if temperature displays stays on during cooling down. If it stays on , you have the single pole switch. If it goes out as soon as fan switch is turned off you have the double pole switch.

REPLACEMENT: Replace single pole switch # 350705.
Install double pole switch # 369260.
Disconnect lead indicated by # in proper diagram and reroute as shown.
Install jumper lead indicated by * in proper diagram.
Reapply all other leads as removed.

THE FOLLOWING ITEMS ARE USED IN THE MODEL 1030, 1046, 1047 IMPINGER OVEN (EXPORT)

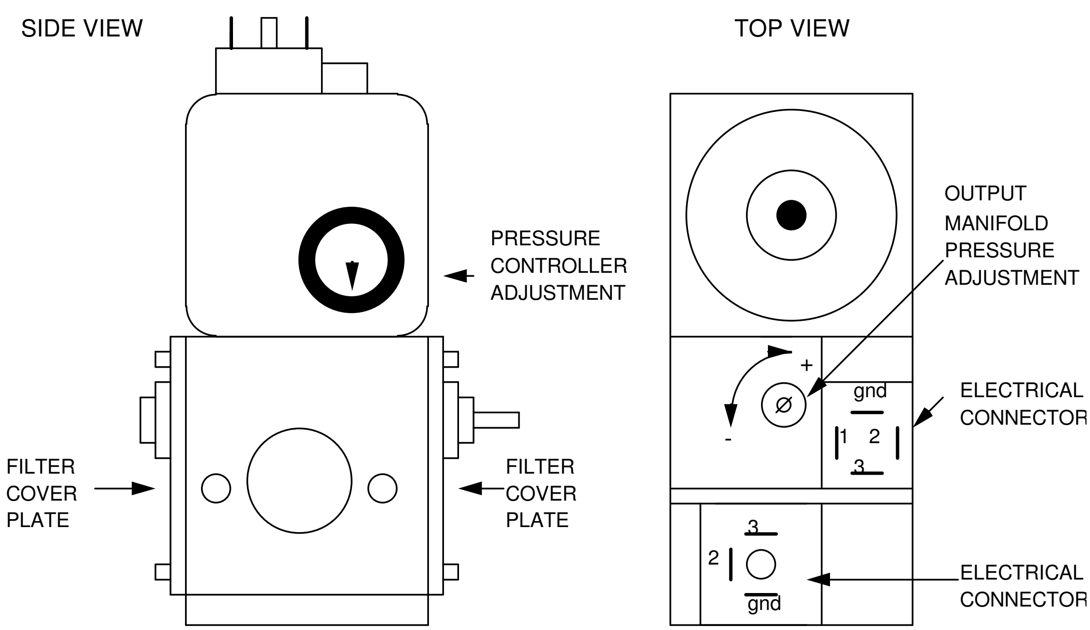
AIR PRESSURE SWITCHES - REPLACEMENT AND ADJUSTMENT

1. Remove control panel top.
2. Disconnect wires from switch making note of wire number and location for reinstallation.
3. Remove air tube from switch assembly.
4. Remove switch from wire hanger.
5. Install new switch in reverse order, make sure air tube is not blocked miss-aligned. Adjust as needed.

To adjust the air pressure switch, remove snap on cover on the side of the switch to expose adjusting screw. To increase sensitivity, turn screw counter clockwise; to decrease sensitivity, turn screw clockwise. Check for proper line voltage switching from N.C. to N.O. as the air pressure switch closes.

GAS VALVE - REPLACEMENT AND ADJUSTMENTS

1. Remove control panel top and front cover.
2. Disconnect the gas piping from the back of the unit.
3. Remove the four (4) screws from the incoming nipple mounting bracket.
4. Remove incoming nipple.
5. Disconnect two (2) plugs, (1) 3 prong and (1) 4 prong - Note location.
6. Disconnect pipe union just above gas valve and remove assembly.
7. Reassemble in reverse order (check all pipe fittings for leaks). After assembled, check for proper adjustment of gas pressure switch, 8.8 on dial for natural gas, 23 for L.P. Gas and 4.5 for town gas.
8. Check and adjust manifold pressure. Remove pressure tap located in gas piping above the gas valve prior to the burner orifice and install manometer . Adjustment screw is located on the front of the valve, remove plastic cap and adjust as needed: 3.5" W.C. for Natural Gas and 10" W.C. for L.P.
9. Check gas filter by removing cover plate (located on either side of valve). Remove four (4) screws and slide filter out of valve housing and inspect. Reassemble in reverse order and check for leaks around cover.



IGNITION CONTROL - REPLACEMENT

1. Remove control panel top and front cover.
2. Loosen two (2) locking screws on front cover of relay (approx. 1/2 turn).
3. Remove front portion of relay by pulling straight out (rocking motion).
4. Remove wires from plug-in terminal strip, note wire numbers and locations.
5. Remove two (2) screws from mounting bracket and remove.
6. Reassemble in reverse order (NOTE: Plug in terminal strip is polarized and will only allow relay to plug in one direction, make sure manual reset button lines up with access hole in front cover.) Check system operation.

HIGH - LIMIT THERMOSTAT - REPLACEMENT

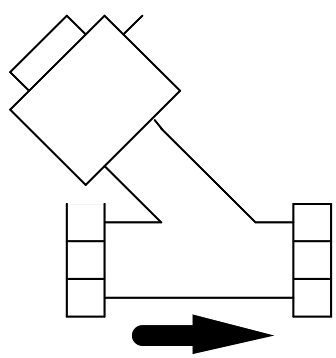
1. Remove control panel top and front cover.
2. Remove conveyor and fingers.
3. Remove capillary bulb from wire form in oven chamber and pull through tube into control box.
4. Remove two (2) wires from thermostat, note wire numbers and location for reinstallation.
5. Remove screws from bracket and remove thermostat.
6. Reassemble in reverse order making sure capillary tube is placed securely in the wire form. **NOTE:** Depress reset button to insure thermostat is set for operation.

SPARK GENERATOR – REPLACEMENT

1. Remove control panel top and front cover.
2. Loosen two (2) locking screws (approx. 1/2 turn) on ignition control and remove front portion of relay exposing terminal strip.
3. Remove two (2) wires for spark generator.
4. Unplug connector on bottom of spark generator.
5. Remove two (2) mounting screws and remove generator assembly.
6. Reassemble in reverse order and check system operation.

SOLENOID VALVE – REPLACEMENT

1. Remove control panel top and front cover.
2. Disconnect pipe union just above gas valve assembly.
3. Disconnect two (2) wires from solenoid, note wire number and location for reinstallation.
4. Remove four (4) nuts from main orifice burner bracket and remove assembly.
5. Replace valve and reassemble in reverse order.
6. After assembly, check all fittings for leaks and check system operation.



FLOW

BURNER ALARM - REPLACEMENT

1. Remove control panel top and front cover.
2. Remove two (2) wires from alarm, note wire numbers and location.
3. Remove retainer cover from alarm and remove assembly from mounting bracket.
4. Reassemble in reverse order and check.

BURNER ALARM LIGHT - REPLACEMENT

1. Remove control panel top and front cover.
2. Remove two (2) wires from light assembly, note wire number and location.
3. Grasp body of light assembly and slide sideways to remove.
4. Reassemble in reverse order and check.

PILOT LIGHT (220V) - REPLACEMENT

1. Remove control panel top and front cover.
2. Remove switch access cover.
3. Remove two (2) wires from light assembly, note wire number and location.
4. Grasp body of light assembly and slide sideways to remove.
5. Reassemble in reverse order and check.

IGNITER SENSOR ASSEMBLY - REPLACEMENT

1. Remove control panel top and front cover.
2. Remove gas valve assembly (See Gas Valve)
3. Remove screws from burner tube and pull burner assembly out.
4. Remove wire connectors from igniter sensor assembly.
5. Remove screws from mounting bracket and remove assembly.
6. Reassemble in reverse order and check system operation.
   NOTE: After installation, check all pipe fittings for leaks.

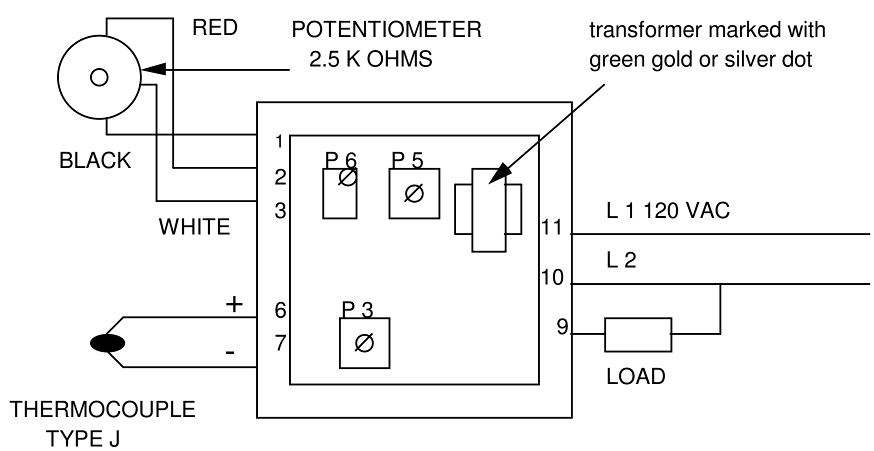
BURNER BLOWER MOTOR – REPLACEMENT

1. Remove control panel top and front cover.
2. Remove screws around blower tube.
3. Disconnect motor wiring and remove.
4. Reassemble in reverse order and check system operation.

TEMPERATURE CONTROL BOARD - REPLACEMENT- MODEL 1030

1. Remove control panel top and front cover.
2. Remove potentiometer leads (3), note color and location.
3. Remove thermocouple leads (2), note color and location (white:pos/red:neg.).
4. Remove power and solenoid leads (4), note wire number and location.
5. Remove screw and board assembly and replace.
6. Reassemble in reverse order and check system operation.
   NOTE: When replacing #369174 with (new) #369728, turn temperature control to its maximum position and allow oven 30 minute preheat then calibrate board as follows:

   Place temperature probe between top fingers #2 and #3 (making sure probe is not touching any metal) and adjust potentiometer P6 to a Maximum temperature of 575°F.



TEMPERATURE CONTROL POTENTIOMETER - REPLACEMENT

1. Remove control panel top and front cover.
2. Remove one screw from control knob guard and move guard to one side.
3. Remove knob and locknut on control pot shaft and pushout.
4. Remove three (3) wires from temperature control board, note wire colors and location.
5. Install new control pot. in reverse order and check system operation.
6. NOTE: If temperature control knob is type with temperature numbers on it, adjust it to agree with the time/temp. display for knobs with reference numbers only, #9 is 500°F/260°C.

RELAY ASSEMBLY, BURNER BLOWER MOTOR - REPLACEMENT

1. Remove control box top and front cover.
2. Remove cover from relay box.
3. Remove wire from ignition control (#20).
4. Remove two (2) wires from transformer (#21 and #23).
5. Remove wire from burner blower motor connector plug (requires pin extractor tool (#369600) (#73).
6. Remove nut and washer from rear of relay assembly and remove assembly.
7. Install new relay in reverse order and check system operation.

TEMPERATURE CONTROL - REPLACEMENT - 1046-1047

1. Remove control panel top and front cover.
2. Remove one screw from control knob guard and move guard to one side.
3. Remove temp. control knob and locknut.
4. Remove six (6) wires from temperature control board , note wire colors and location.
5. Install new temperature control board in reverse order and check system operation.

RELAY, GAS CONTROL - REPLACEMENT - MODEL 1046,1047

1. Shut off power at main breaker.
2. Remove control panel top and front cover.
3. Remove cover from relay box.
4. Disconnect all wires and mark for replacement.
5. Remove relay by removing two (2) mounting screw.
6. Reassemble in reverse order.

TIME DELAY RELAY, 20 MINUTE - REPLACEMENT

1. Remove control box top and front cover.
2. Disconnect all wires and mark for replacement.
3. Remove center mounting screw.
4. Reassemble in reverse order.
   NOTE: Do not over tighten mounting screw as this may damage the internal electronic components.

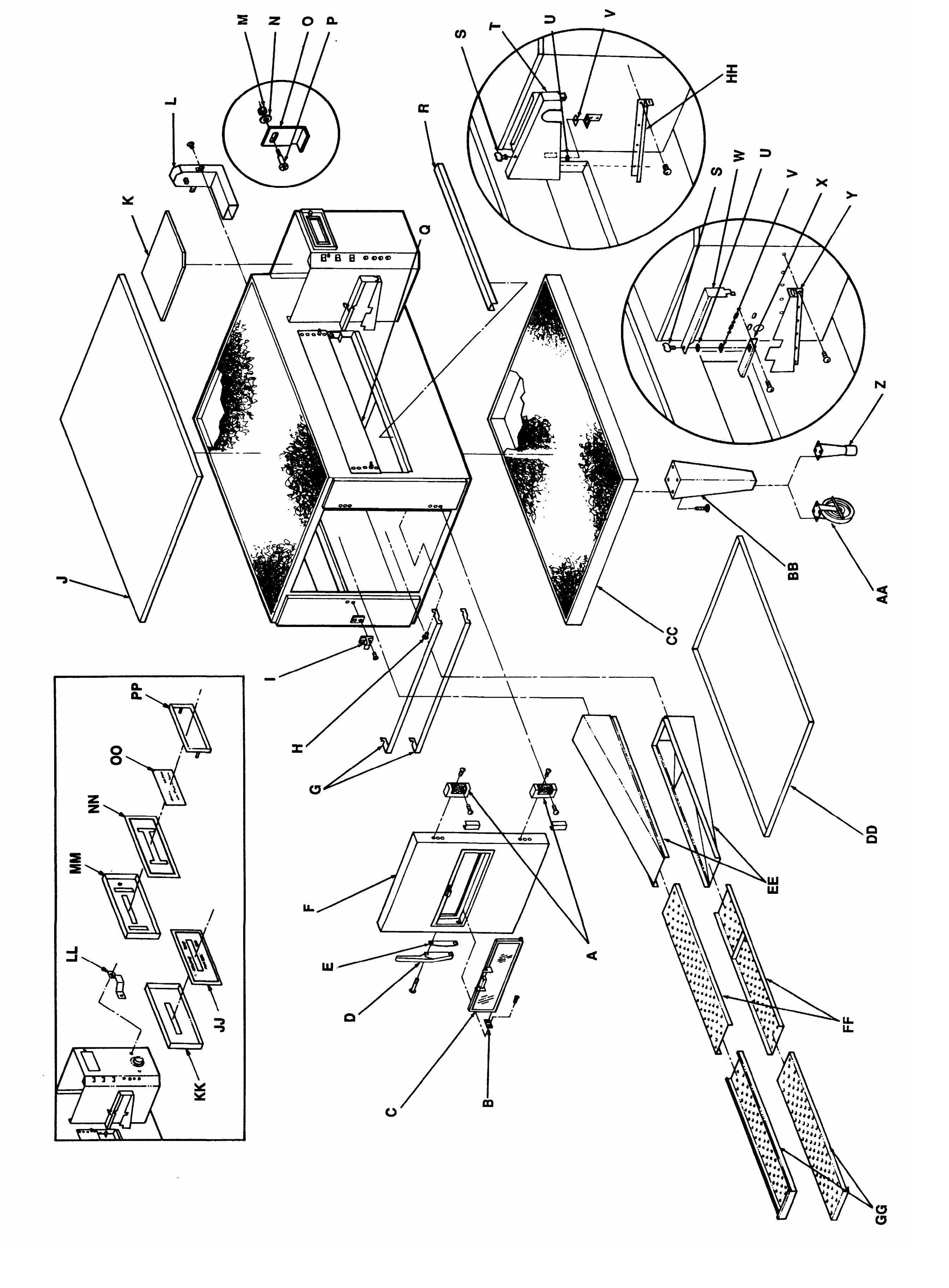
CONVEYOR BEARING REPLACEMENT AND SHAFT LUBRICATION – 1200 SERIES OVENS

1. Remove conveyor from oven.
2. Remove conveyor belt.
3. Remove idle & drive shaft assemblies
4. Disassemble and clean/replace parts as needed. Use Molykote G-N metal assembly paste for lubrication.

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LETTER	PART NO.	DESCRIPTION
A	369003	Door Hinge
B	369207	Handle Retainer
	369337	Retainer (See page 62)
C	369110	Access Window (See page 62)
D	369209	Latch & Strike
E	369828	Handle Spacer
F	369157	Complete Door
G	1534	Finger Support Assy.
H	369057	Support Bracket Pins
I	369643	Strike Assy.
J	1009	Oven Top
K	369062	Top, Control Panel
L	369046	Flue Assy. (Gas)
	369367	Flue Assy. (Electric)
M	369140	Compression Spring
N	369903	Flat Washer, 5/16"
O	369141	Conveyor Hold Down Bracket
P	369139	Shoulder Screw
Q	369058	Baffle, Inlet and Outlet
	369211	Thumb Screw
R	369369	Seam Cover, Conveyor Opening
S	369203	Stud Wing Head
T	369749	Chain Cover Assy. (S/N Q14974 & Above)
U	369204	Split Ring Retainer
V	369373	Receptacle, Snap In
W	369205	Chain Guard Cover – S/N 2164 to Q14973
X	369651	Top, Chain Guard – S/N 2164 to Q14973
Y	369379	Bottom Chain Guard – S/N 2164 to Q14973
Z	369052	Adjustable Leg
AA	369030	Caster – 6"
BB	369328	Leg, Stand
CC	369904	Insulation Holder
DD	369218	Internal Crumb Pan
EE	369053	Finger Housing
FF		Columnating Plates (See Installation Manual)
GG	369055	Finger Cover
HH	369748	Bracket, Chain Cover – S/N Q14974 & Above
JJ	369690	Label, Time/Temp Display Cover
KK	370048	Instrument Cover
LL	369673	Thermostat Guard
MM	369244	Instrument Cover Assy.
NN	369887	Instrument Cover Label
OO	369886	Window Fº
	369199	Window Cº
PP	369246	Display Bezel

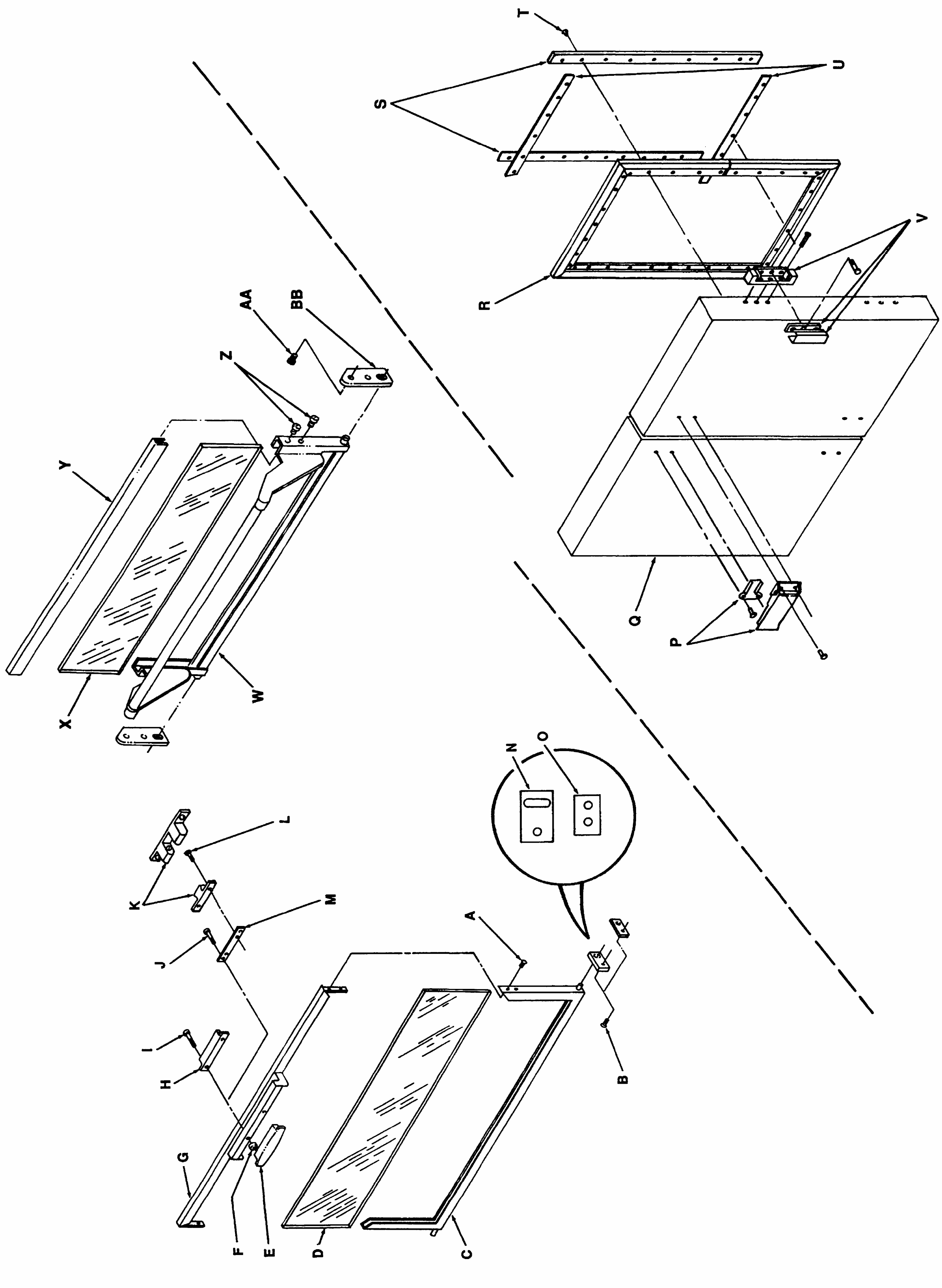
BLOW UP / 1000, 1200 – GENERAL



PARTS / ACCESS DOOR & 1050 DOOR

LETTER	PART NO.	DESCRIPTION
	369110	Complete Access Window Assy.
A	369310	Screw, 6-32 x 3/16”
B	369377	Screw, 8-32 x 3/8”
C	369308	Bottom, Access Window Assy.
D	369111	Glass, Old Style 4 9/32” X 20”
	369334	Glass, New Style 4” x 20”
E	350638	Handle
F	369311	Handle Spacer (2 required)
G	369309	Top, Access Window Assy.
H	369336	Door Latch
I	369906	Screw, 8-32 x 5/8”
J	369230	Screw, 8-32 x ¾”
K	369112	Ball Catch
L	350257	Screw, 6-32 x 3/8”
M	369229	Adapter Plate
N	369337	Retainer, New Style
O	369207	Retainer, Old Style
P	369004	Door Latch & Catch
Q	369031	Complete Door Assy.
R	369015	Door Gasket
S	369049	Vertical Retaining Plate
T	369051	Retaining Plate Screw
U	369050	Horizontal Retaining Plate
V	369003	Door Hinge
W	369926	Window Frame, Bottom
X	369925	Glass, Access Window
Y	369927	Window Frame, Top
Z	369930	Screw, 10-32 x ¼”
AA	369931	Screw, 8-32 x 3/8”
BB	369929	

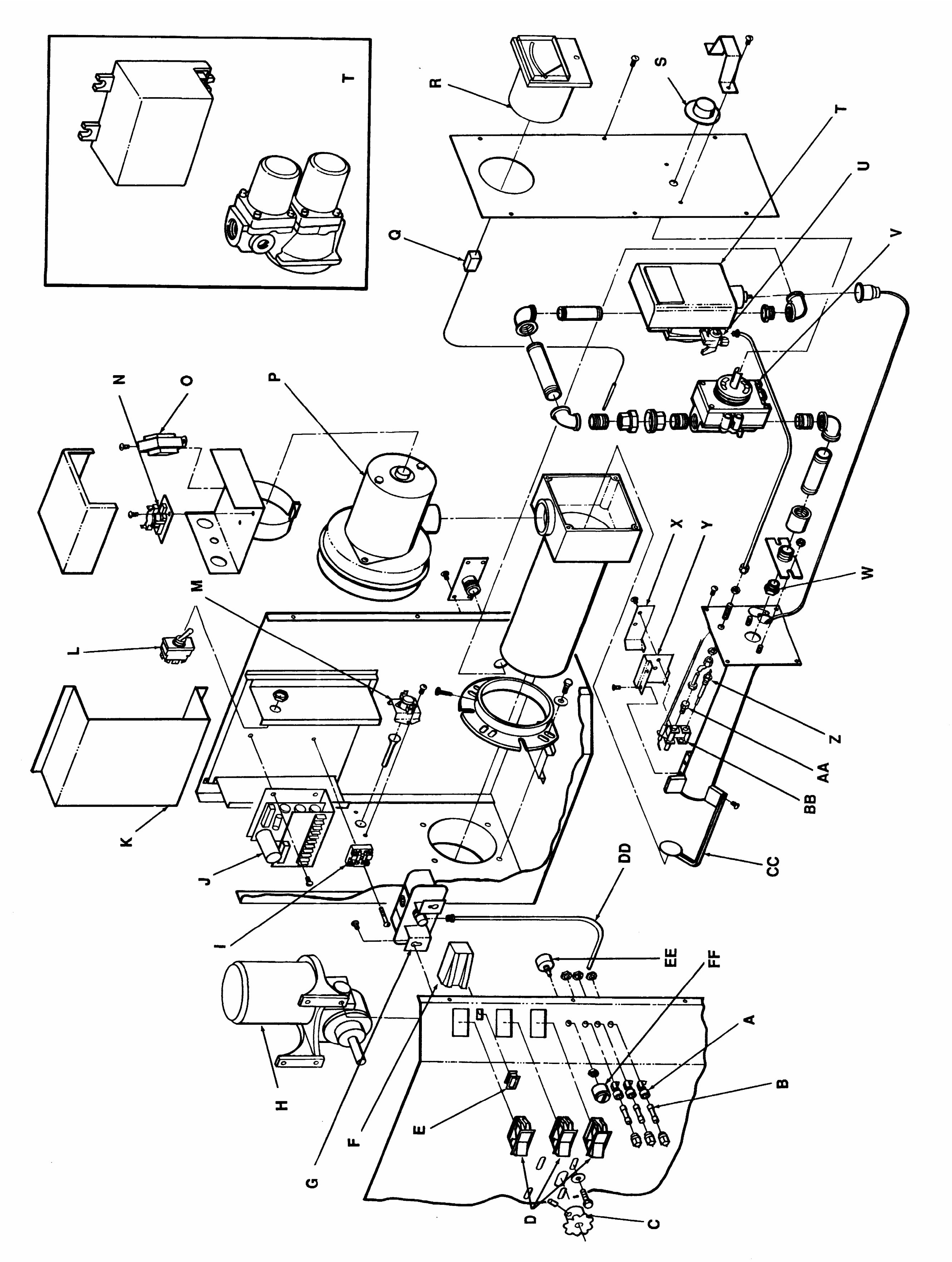
BLOW UP / ACCESS DOOR & 1050 DOOR



PARTS / MODEL 1000,1001,1050,1051,1004, &1005 – S/N 100 TO 4389

LETTER	PART NO.	DESCRIPTION
A	369012	Fuseholder
	369013	Fuse, 3 Amp
B	369014	Fuse, 10 Amp
C	369066	Sprocket, Drive - Prior to S/N 4390
D	369260	Switch, ON/OFF
E	350225	Lens, Red
F	369104	Pilot Light, 24 VAC
G	369025	Blower Air Switch
H	369022	Conveyor Motor - Prior to S/N 4390
	369113	Brush
	369114	Brush Cap
	369115	Brush Spring
I	369032	Relay
J	369008	D. C. Conveyor Controller - S/N 4389 & Below
K	369079	Relay Cover
L	369080	Reverse Switch w/Harness - Prior to S/N 4390
M	369007	Temperature Sensing Switch
	369902	Sensing Rod Switch
N	N. L. A	See Burner Blower Motor - Page 34
O	369531	Transformer, 120/24V- 40VA
P	369366	Burner Blower Motor Kit
Q	369009	Thermocouple
R	369029	Temperature Gauge
S	369108	Thermostat Knob (Degree F)
T	369263	Gas Valve (Body Only), NAT/LP
	369393	Ignition Control, NAT & LP
U	369344	Pilot Shut Off Valve
V	369006	Temperature Control Valve
W	369072	Main Burner Orifice, Natural Gas
	369099	Main Burner Orifice, LP
X	369144	Pilot Shield, Extension
Y	369202	Pilot Shield, Main
Z	369075	Flame Sensor
A A	369073	Pilot Orifice, Natural Gas
	369100	Pilot Orifice, LP
B B	369076	Burner Ignitor
C C	369142	Flame Target
D D	369067	Air Switch Tube
E E	369063	Conveyor Speed Controller - Prior to S/N 4390
F F	369064	Conveyor Speed Control Dial

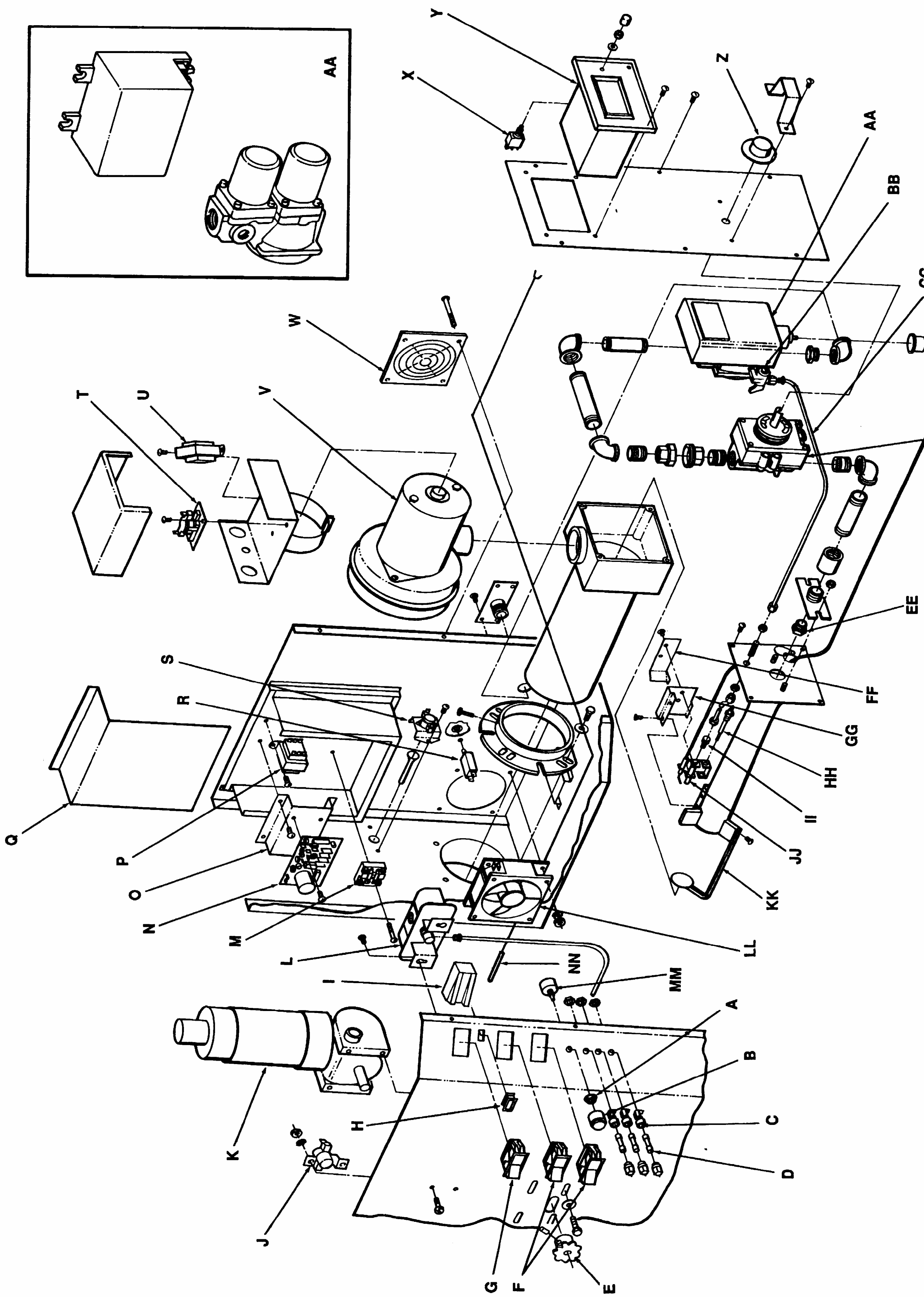
BLOW UP / 1000, 1001, 1050, 1051, 1004, & 1005 S/N 100 TO 4389



PARTS / MODEL 1000,1001,1004, AND 1005 S/N 4390 & ABOVE

LETTER	P/N	DESCRIPTION
A	369247	Shaft Lock Ring
B	369248	Knob
	369064	Conveyor Speed Control Dial (Non-Digital Display Ovens)
C	369012	Fuseholder
D	369013	Fuse, 3 Amp
	369014	Fuse, 10 Amp
E	369158	10 Tooth Sprocket - S/N 4390 & Above
F	350705	Switch ON/OFF
G	369260	Double Pole Fan Switch
H	350225	Lens, Red
I	369104	Pilot Light, 24 VAC
J	369507	Cooling Fan Thermostat
K		SEE PAGE 82
L	369025	Blower Air Switch
M	369032	Relay
N	369155	Conveyor Motor Control Board
	357028	Fuse, Non Delay, 1A 250V
	369201	Fuse, 4 Amp, 250V
O	369240	Hi Hat
P	369173	Control Transformer
Q	369363	Unit Relay Cover Top LH
R	369154	0.7 Amp Circuit Breaker
S	369007	Temperature Sensing Switch
	369902	Sensing Rod Kit
T	N. L. A.	See Burner Blower Motor - Page 34
U	369531	Transformer 120/24V - 40VA
V	369366	Burner Blower Motor Kit
W	369331	Finger Guard, Cooling Fan
X	369167	Set Switch Assy.
Y	369172	Digital Display
	369029	Temperature Gauge (Not Shown)
	369009	Thermocouple (Not Shown) used with Temperature Gauge
Z	369108	Thermostat Knob (Degree F)
AA	369263	Gas Valve (Body Only) NAT/LP
	369393	Ignition Control NAT & LP
B B	369344	Pilot Shut Off Valve
C C	369086	Pilot Line Assy - S/N 121 & Above
D D	369006	Temperature Control Valve
E E	369072	Main Burner Orifice Natural Gas
	369099	Main Burner Orifice LP
F F	369144	Pilot Shield Extension
G G	369202	Pilot Shield Main
H H	369075	Flame Sensor
I I	369073	Pilot Orifice Natural Gas
	369100	Pilot Orifice LP
JJ	369076	Burner Igniter
K K	369142	Flame Target
L L	369124	Cooling Fan Control Box
MM	369152	Oven Conveyor Control Pot.
N N	369193	Thermistor Probe

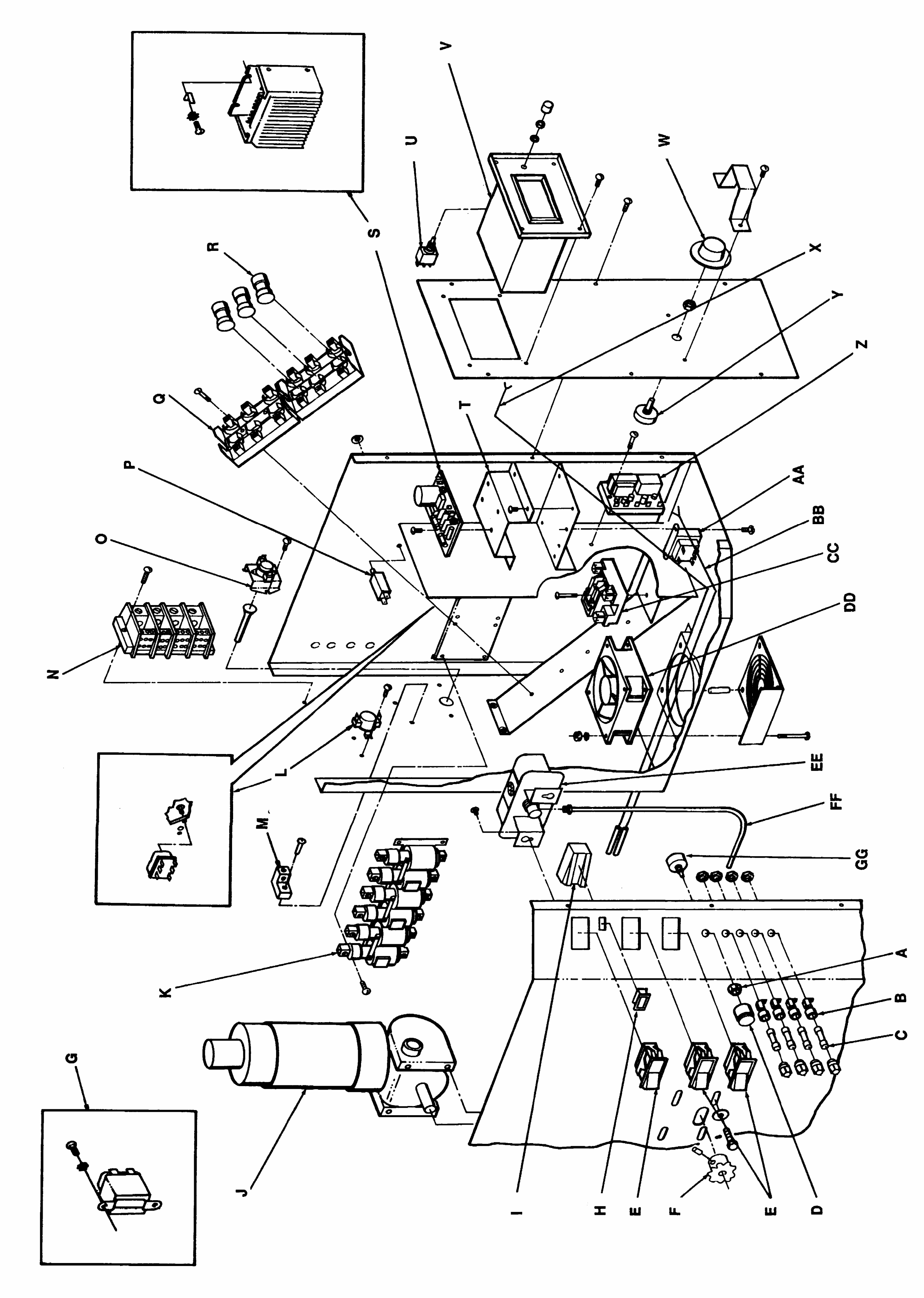
BLOW UP 1000, 1001, 1004, 1005 S/N 4390 & ABOVE



PARTS / 1022-1023

LETTER	P/N	DESCRIPTION
A	369247	Shaft Lock Ring
B	369012	Fuseholder
	369129	Fuseholder, Main Fan
C	369013	Fuse, 3 Amp
	369130	Fuse, 15A
D	369064	Conveyor Speed Control Dial-Non Digital Display Units
	369248	Knob
E	369260	Switch, ON/OFF
F	369066	Sprocket, Drive - Prior to S/N 4390 & S/N Q19078 and above
	369158	10 Tooth Sprocket - S/N 4390 to S/N Q19077
G	369605	Transformer (Stepper)
H	350225	Lens, Red
I	369128	Neon Pilot Light, 125 VAC
J	369022	Motor, Conveyor - S/N 4389 & Below
		SEE PAGE 82 S/N 4390 & Above
	369113	Brush (For 369022)
	369114	Brush Cap (For 369022)
	369115	Brush Spring (For 369022)
K	369120	Contactor, 60A
L	369127	Hi Limit Thermostat
	357067	Thermostat, Capillary
M	353014	Supply Terminal (Ground)
N	369118	Power Terminal Block
O	369007	Temperature Sensing Switch
	369902	Sensing Rod Kit
P	369154	0.7 Amp Circuit Breaker
	369640	Control (Stepper) S/N Q19078 & Above
	357028	Fuse, Non Delay, 1 A 250V
	369201	Fuse, 4 Amp, 250V
T	369240	Hi Hat
U	369167	Set Switch Assy.
	370046	Button Only
V	369172	Digital Display
	369029	Temperature Gauge (S/N Q5276 & Down) Uses 369009 T-Couple
W	369342	Knob, Temperature Control
X	369193	Thermistor Probe
Y	369340	Potentiometer, Temp. Control & Harness
Z	369132	Temperature Control Board
A A	369173	Control Transformer
B B	369131	Thermocouple Probe Assy.
C C	369032	Relay
D D	369124	Cooling Fan, Control Box
	369535	Cord Set, Cooling Fan
EE	369025	Blower Air Switch
FF	369067	Air Switch Tube
GG	369063	Conveyor Speed Controller S/N 4389 & Below
	369153	Electric Conveyor Control Pot. S/N 4390 to Q19077
	369391	Speed Pot. (Stepper) S/N Q19078 & Above
Not Shown	369080	Reversing Switch – S/N 4389 & Below

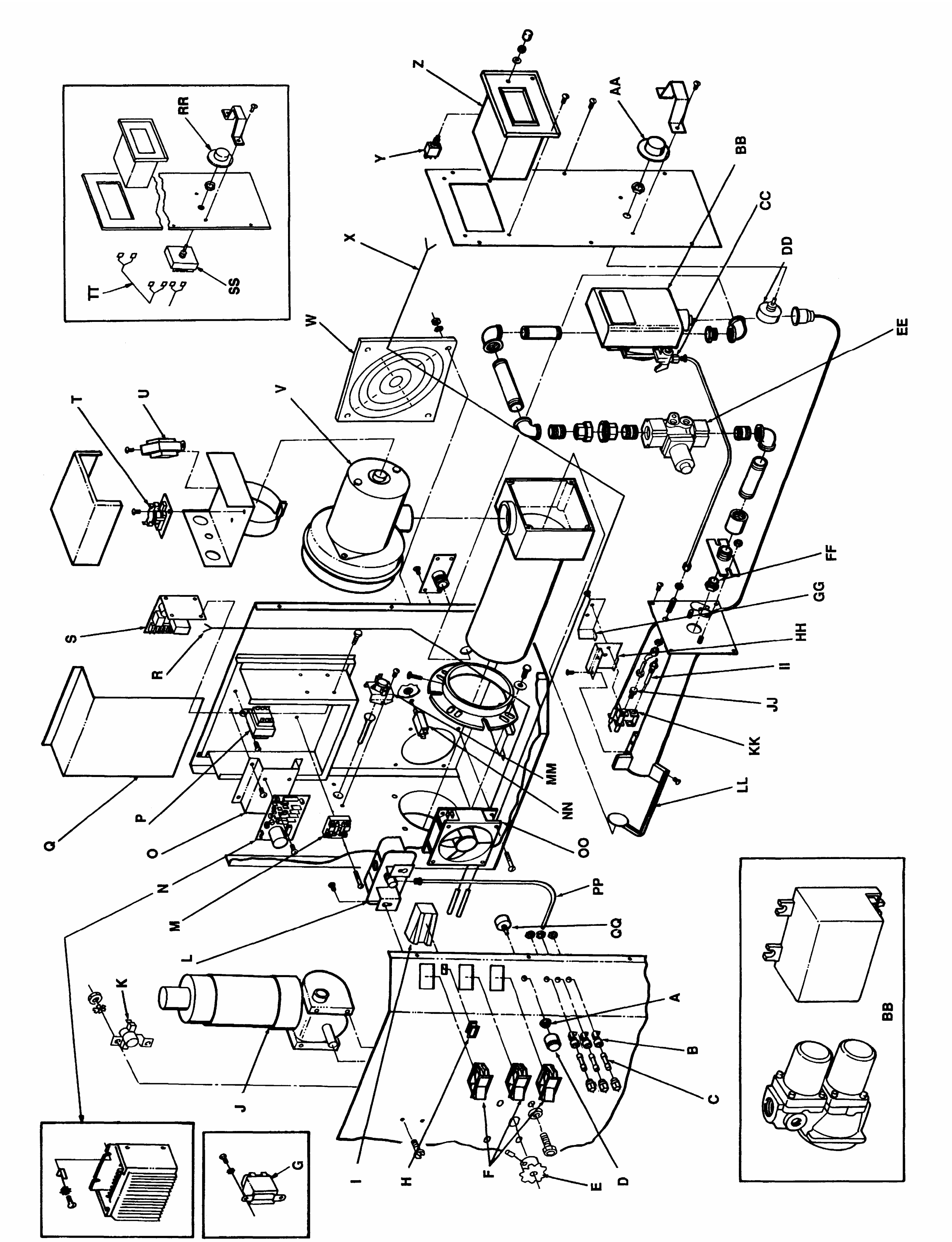
BLOW UP / 1022, 1023



PARTS / 1040-1041

LETTER	P/N	DESCRIPTION
A	369247	Shaft Lock Ring
B	369012	Fuseholder
C	369013	Fuse, 3 Amp
	369014	Fuse, 10 Amp
D	369248	Knob
E	369158	10 Tooth Sprocket - S/N 4390 to Q14973
	369066	Sprocket - S/N 14974 & Above
F	369260	Switch, ON/OFF
G	369605	Transformer (Stepper)
H	350225	Red Lens
I	369104	Pilot Light 24 VAC
J		SEE PAGE 82
K	369507	Cooling Fan Thermostat
L	369025	Blower Air Switch
M	369032	Relay
N	369155	Conveyor Motor Control Board - S/N 4390 - Q14973
	369640	Control Stepper- S/N Q14974 & Above
	357028	Fuse, Non Delay, 1 A 250V
	369201	Fuse, 4 Amp, 250V
O	369240	Hi Hat
P	3691730	Control Transformer
Q	369363	Unit Relay Cover, Top LH
R	369131	Thermocouple Probe Assy
S	369270	Electronic Temperature Control Q18037 & Below
T	N. L. A.	See Burner Blower Motor - Page 34
U	369531	Transformer, 120/24V - 40VA
V	369366	Burner Blower Motor Kit
W	369331	Finger Guard, Cooling Fan
X	369193	Thermistor Probe
Y	369167	Set Switch Assy.
	370046	Button Only
Z	369172	Digital Display
AA	369316	Knob, Temperature Adjustment
B B	369263	Gas Valve (Body Only), NAT/LP
	369393	Ignition Control, NAT & LP
C C	369344	Pilot Shut Off Valve
D D	369317	Potentiometer, Temperature Adjustment w/Faceplate
E E	369398	Solenoid Valve, NAT & LP
F F	369072	Main Burner Orifice, Natural Gas
	369099	Main Burner Orifice, LP
G G	369144	Pilot Shield, Extension
H H	369202	Pilot Shield, Main
I I	369075	Flame Sensor
JJ	369073	Pilot Orifice, Natural Gas
	369100	Pilot Orifice, LP
K K	369076	Burner Ignitor
L L	369142	Flame Target
MM	369007	Temperature Sensing Switch
	369902	Sensing Rod Kit
N N	369154	0.7 Amp Circuit Breaker
O O	369124	Cooling Fan, Control Box
P P	369067	Air Switch Tube
QQ	369152	Potentiometer, conveyor S/N 4390 - Q14973
	369391	Potentiometer, conveyor S/N Q14974 & Above
RR	369316	Knob, temperature control
SS	369801	Thermostat
TT	370058	Jumper, thermocouple

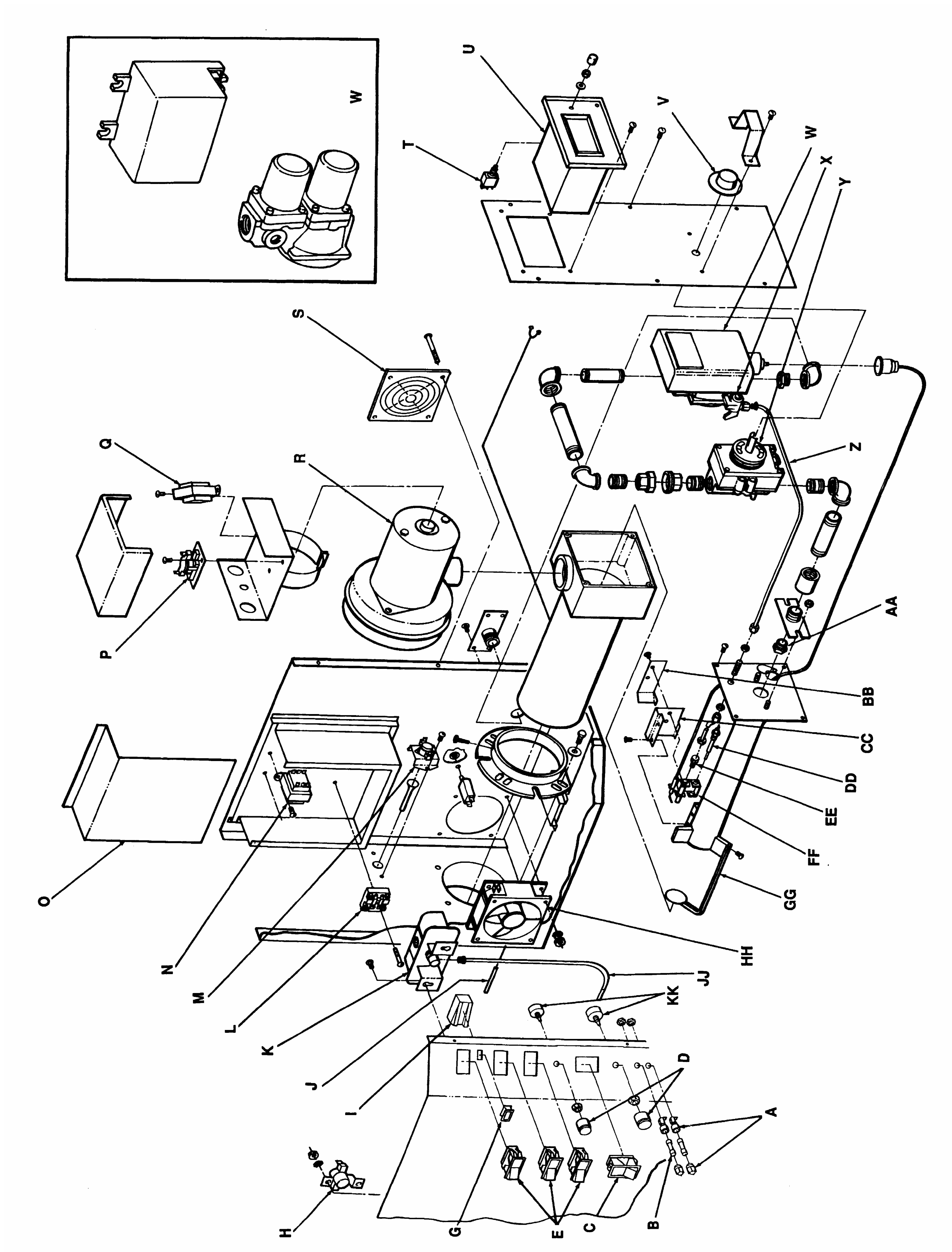
BLOW UP / 1040, 1041



PARTS / 1200, 1201, 1204 AND 1205

LETTER	P/N	DESCRIPTION
A	369012	Fuseholder
B	369014	Fuse, 10 Amp
C	369252	Paddle Switch
D	369248	Knob
	369247	Shaft Lock Ring
E	369260	Switch, ON/OFF
G	350225	Lens, Red
H	369507	Cooling Fan Thermostat
I	369104	Pilot Light, 24 VAC
J	369193	Thermistor Probe
K	369025	Blower Air Switch
L	369032	Relay
M	369007	Temperature Sensing Switch
	369902	Sensing Rod Kit
N	369173	Control Transformer
O	369363	Unit Relay Cover, Top LH
P	N. L. A	See Burner Blower Motor - Page 34
Q	369531	Transformer, 120/24V - 40VA
R	369366	Burner Blower Motor Kit
S	369331	Finger Guard, Cooling Fan
T	369167	Set Switch Assy.
	370046	Button Only
U	369172	Digital Display
V	369108	Thermostat Knob (Degree F)
W	369263	Gas Valve (Body Only), NAT/LP
	369393	Ignition Control, NAT & LP
X	369344	Pilot Shut Off Valve
Y	369006	Temperature Control Valve
Z	369086	Pilot Line Assy - S/N 121 & Above
A A	369072	Main Burner Orifice, Natural Gas
	369099	Main Burner Orifice, LP
BB	369144	Pilot Shield, Extension
C C	369202	Pilot Shield, Main
D D	369075	Flame Sensor
E E	369073	Pilot Orifice, Natural Gas
	369100	Pilot Orifice, LP
F F	369076	Burner Ignitor
G G	369142	Flame Target
H H	369124	Cooling Fan, Control Box
JJ	369067	Air Switch Tube
KK	369253	Speed Pot., "A"
	369254	Speed Pot., "B"

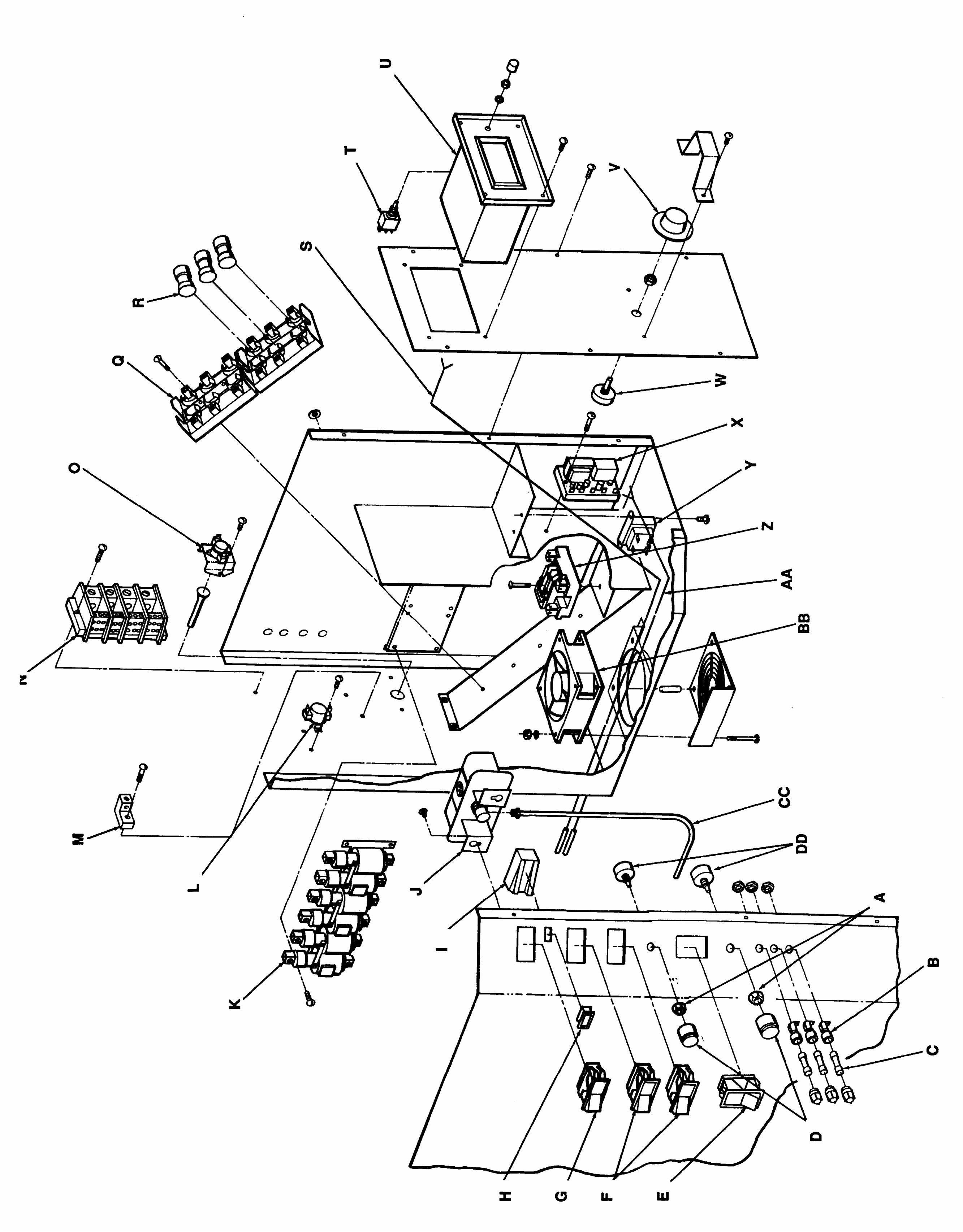
BLOW UP / 1200, 1201, 1204, 1205



PARTS / 1202-1203

LETTER	P/N	DESCRIPTION
A	369247	Shaft Lock Ring
B	369129	Fuseholder, 15A
	369012	Fuseholder
C	369013	Fuse, 3 Amp
	369130	Fuse, 15A
D	369248	Knob
E	369252	Paddle Switch
F	369260	Switch, ON/OFF
H	350225	Lens, Red
I	369128	Neon Pilot Light, 125 VAC
J	369025	Blower Air Switch
K	369120	Contactor, 60A
L	369127	Hi Limit Thermostat
M	353014	Supply Terminal (Ground)
N	369118	Power-Terminal Block
O	369007	Temperature Sensing Switch
	369902	Sensing Rod Kit
Q	369119	60A Fuseholder
R	369134	Fuse, 50A
S	369193	Thermistor Probe
T	369167	Set Switch Assy
	370046	Button Only
U	369172	Digital Display
V	369342	Knob, Temperature Control
W	369340	Potentiometer, Temp. Control Harness
X	369132	Temperature Control Board
Y	369173	Control Transformer
Z	369032	Relay
A A	369131	Thermocouple Probe Assy.
B B	369124	Cooling Fan, Control Box
C C	369067	Air Switch Tube
D D	369253	Speed Pot., "A" S/N 14974 & Below
	369254	Speed Pot., "B" S/N 14974 & Above

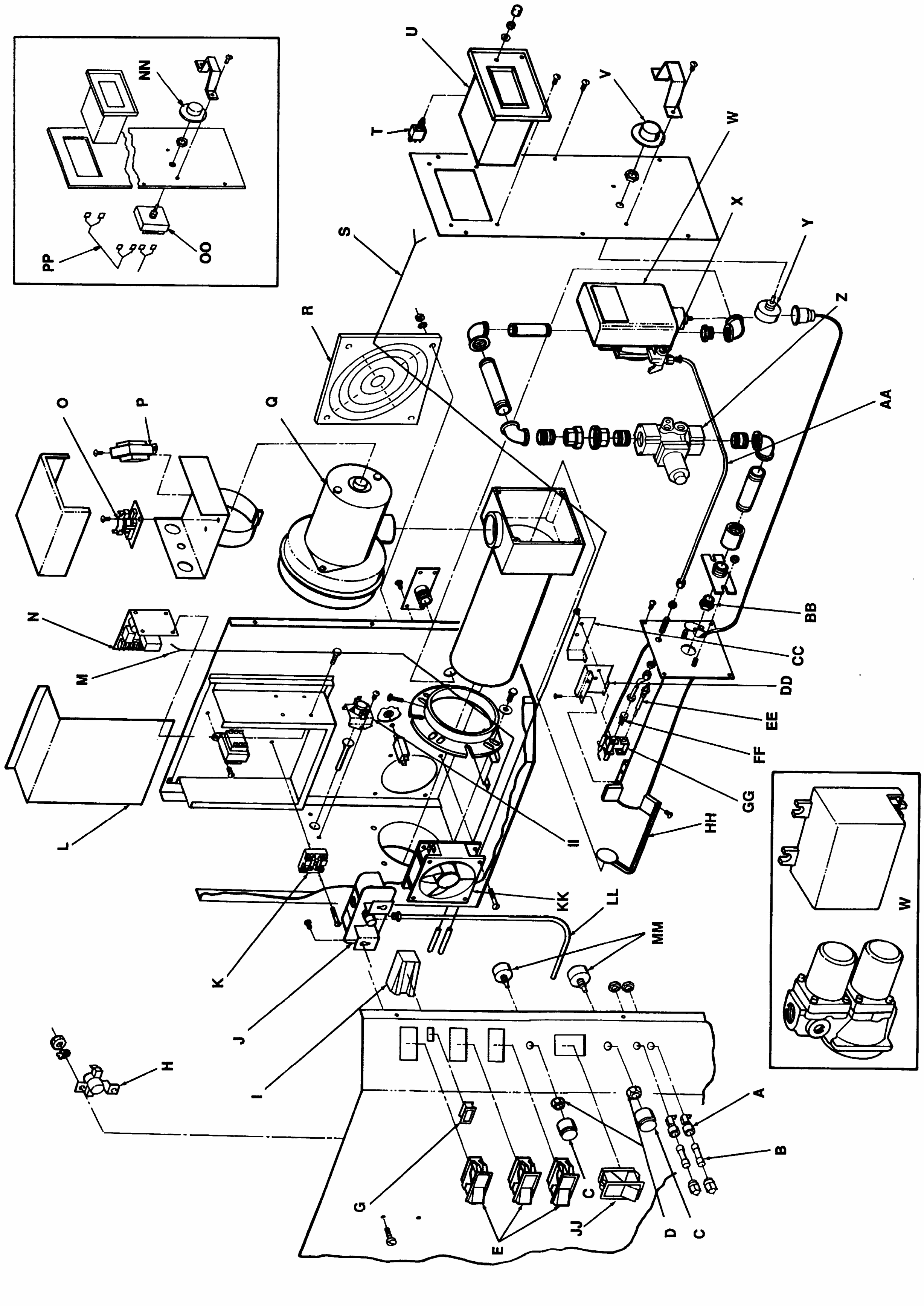
BLOW UP / 1202, 1203



PARTS / 1240-1241

LETTER	P/N	DESCRIPTION
A	369012	Fuseholder
B	369014	Fuse, 10 Amp
C	369248	Knob
D	369247	Shaft Lock Ring
E	369260	Switch, ON/OFF
G	350225	Lens, Red
H	369507	Cooling Fan Thermostat
I	369104	Pilot Light, 24 VAC
J	369025	Blower Air Switch
K	369032	Relay
L	369363	Unit Relay Cover, Top LH
M	369131	Thermocouple Probe Assy
N	369270	Electronic Temperature Control
O	N. L. A.	See Burner Blower Motor - Page 34
P	369531	Transformer, 120/24V - 40VA
Q	369366	Burner Blower Motor Kit
R	369331	Finger Guard, Cooling Fan
S	369193	Thermistor Probe
T	369167	Set Switch Assy.
	370046	Button Only
U	369172	Digital Display
V	369316	Knob, Temperature Adjustment
W	369263	Gas Valve (Body Only), NAT/LP
	369393	Ignition Control, NAT & LP
X	369344	Pilot Shut Off Valve
Y	369317	Potentiometer, Temperature Adjustment w/Faceplate
Z	369398	Solenoid Valve, NAT & LP
AA	369086	Pilot Line Assy - S/N 121 & Above
B B	369072	Main Burner Orifice, Natural Gas
	369099	Main Burner Orifice, LP
C C	369144	Pilot Shield, Extension
D D	369202	Pilot Shield, Main
E E	369075	Flame Sensor
F F	369073	Pilot Orifice, Natural Gas
	369100	Pilot Orifice, LP
G G	369076	Burner Ignitor
H H	369142	Flame Target
I I	369007	Temperature Sensing Switch
	369902	Sensing Rod Kit
JJ	369252	Paddle Switch
K K	369124	Cooling Fan, Control Box
L L	369067	Air Switch Tube
MM	369253	Speed Pot., "A" S/N 4390 - Q14790
	369254	Speed Pot., "B" S/N 4390 - Q14790
	369652	Speed Pot., (Stepper) S/N Q14791 & Above
N N	369316	Knob
O O	369801	Thermostat
P P	370058	Thermocouple Jumper

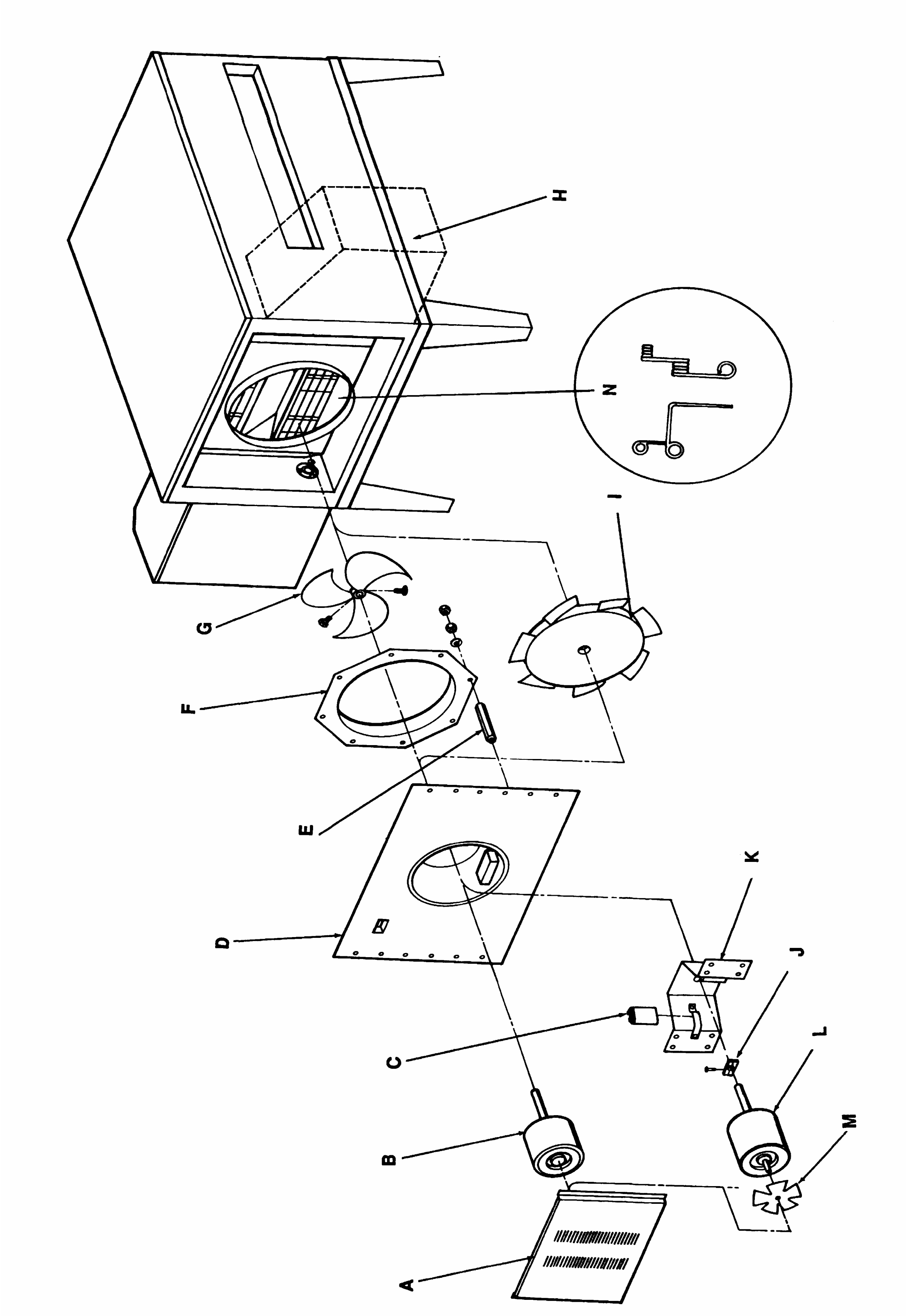
BLOW UP / 1240, 1241



PARTS / OVEN BACK - GAS

LETTER	P/N	DESCRIPTION
A	369048	Motor and Fan Cover
B	369212	Motor, S/N begins with a"Q"
	369214	Motor, 50 Hz, 240V
C	369192	Capacitor 7.5 MFD, 370 VAC
D	369045	Oven Back- S/N 4612 & Below
	369306	Oven Back Assy. - S/N 4613 & Above
E	369646	Rod, Stand Off
F	369647	Inlet Panel, 16"
G	369213	Fan, S/N begins with a "Q"
H		See Page 86
I	N.L.A.	See Conversion Kits Below
J	369026	Heat Slinger Bar
K	369215	Motor Support Assy - S/N Q4613 & Above
	369028	Motor Mount Support Assy. - S/N 4612 & Below
L	369020	Oven Fan Motor- S/N 4612 & Below
M	369027	Motor Cooling Fan
N	369545	Wire Form, Thermostat Bulb
	369547	Wire Form, Thermostat Bulb -1040 Series
Not Shown	369318	Cone Conversion Kit 60 HZ
		Replaces N.L.A. Fan Assy. with New Style Oven Back Assy.
Not Shown	369321	Cone Conversion Kit 50 HZ
		Replaces N.L.A. Fan Assy. with New Style Oven back Assy.

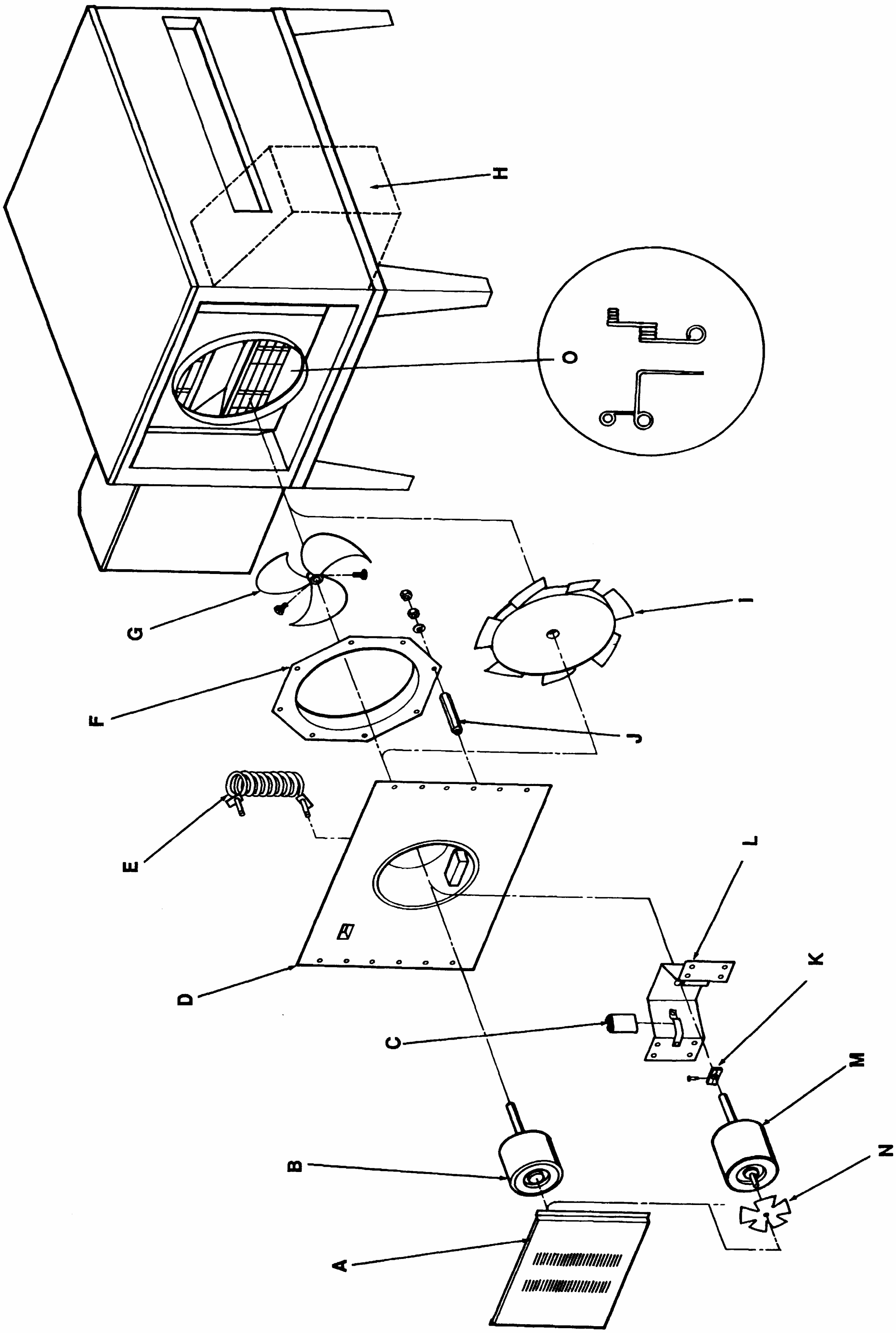
BLOW UP / OVEN BACK – GAS



PARTS / OVEN BACK- ELECTRIC

LETTER	P/N	DESCRIPTION
A	369699	Rear Cover Assy.
B	369212	Motor, S/N begins with a "Q"
	369214	Motor, 50 Hz, 240V
C	369192	Capacitor 7.5 MFD, 370 VAC
D	369307	Oven Back Assy. - S/N 4768 & Above
E	369122	240V Heating Element
	369287	208V Heating Element
	369315	220V Heating Element
F	369647	Inlet Panel, 16"
G	369213	Fan, S/N begins with a "Q"
H		See Detail Page 86
I	N.L.A	See Conversion Kits Below
J	369646	Rod, Stand Off
K	369026	Heat Slinger Bar
L	369215	Motor Support Assy - S/N Q4768 & Above
	369028	Motor Mount Support Assy. - S/N Q4767 & Below
M	369020	Oven Fan Motor- S/N Q4767 & Below
N	369027	Motor Cooling Fan
O	369547	Wire Form, Thermostat Bulb- Electric Ovens
Not Shown	369319	Cone Conversion Kit 208V 60 HZ
		Replaces N.L.A. Fan Assy. with New Style Oven Back Assy
Not Shown	369320	Cone Conversion Kit 240V 60 HZ
		Replaces N.L.A. Fan Assy. with New Style Oven Back Assy.
Not Shown	369322	Cone Conversion Kit 220V 50 HZ
		Replaces N.L.A. Fan Assy. with New Style Oven Back Assy.
Not Shown	369323	Cone Conversion Kit 240V 50 HZ
		Replaces N.L.A. Fan Assy. with New Style Oven Back Assy.

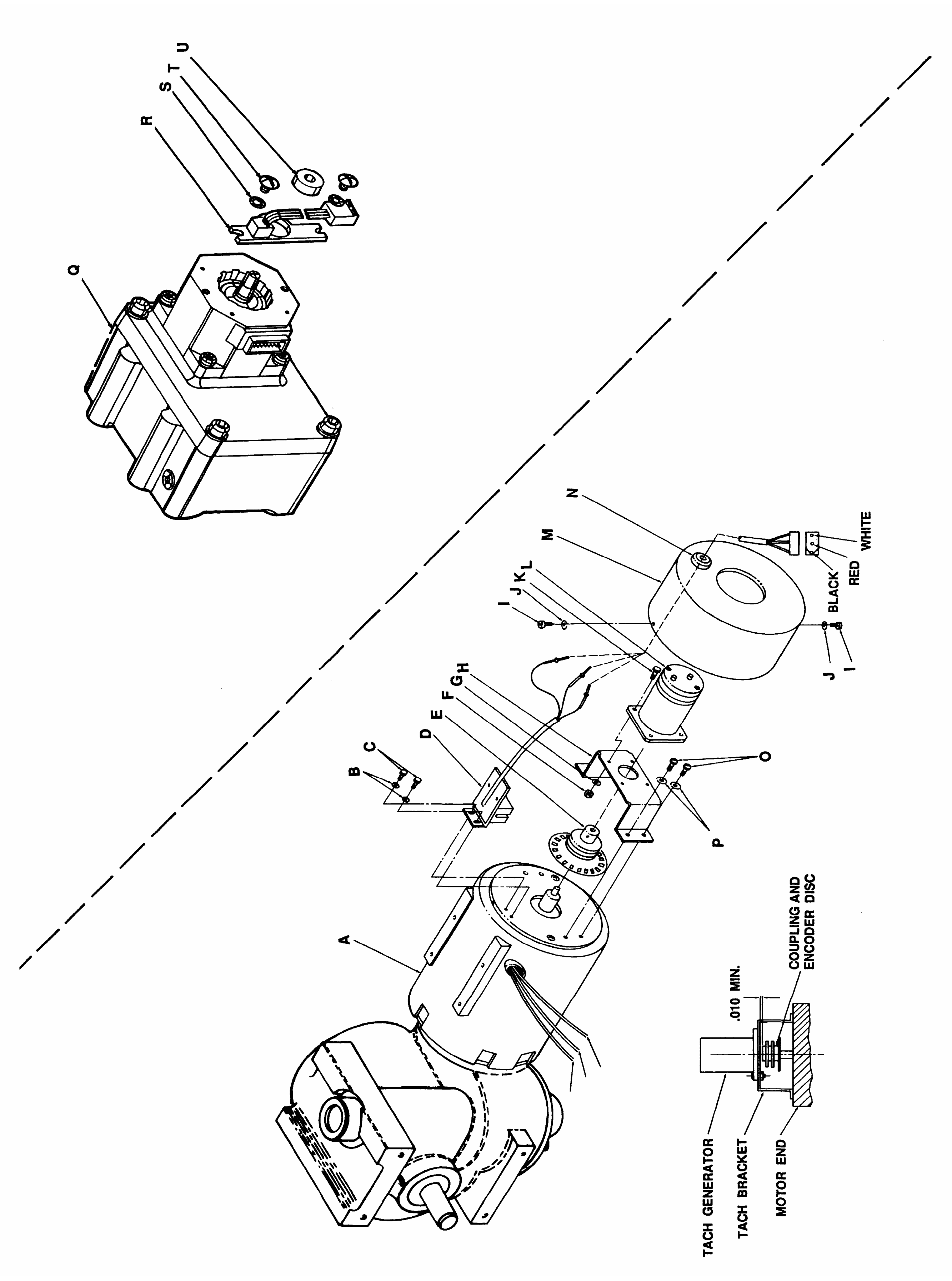
BLOW UP / OVEN BACK – ELECTRIC



PARTS / CONVEYOR MOTOR ASSEMBLY S/N 4390 & ABOVE

LETTER	P/N	DESCRIPTION
A	369291	Motor, DC - Conveyor
	369384	Motor Brush Assy.
B	369294	#4 Lockwasher
C	369296	Screw, 4-40 x 1/4
D	369290	Optical Encoder Assy.
E	369151	Coupling and Encoder Disc (.050 in. Allen Wrench included)
F	369146	Hex Nut, 4-40
G	369294	#4 Lockwasher
H	369292	Bracket, Tach. Generator
I	369297	Screw, 6-32 x 1/4
J	369156	#6 Lockwasher
K	369293	Screw, 4-40 x 3/8
L	369150	Tach. Generator
M	369298	Dust Cover
N	369299	Bushing
O	350247	Screw, 10-32 x 3/8
P	369295	#10 Lockwasher
Q	369603	Stepper Motor Gearbox Assy. - includes R, S, T, U
R	369737	Hall Effect Sensor
S	369900	#8 Lockwasher
T	369658	Screw, 8-32 x 1/4
U	369736	Magnet

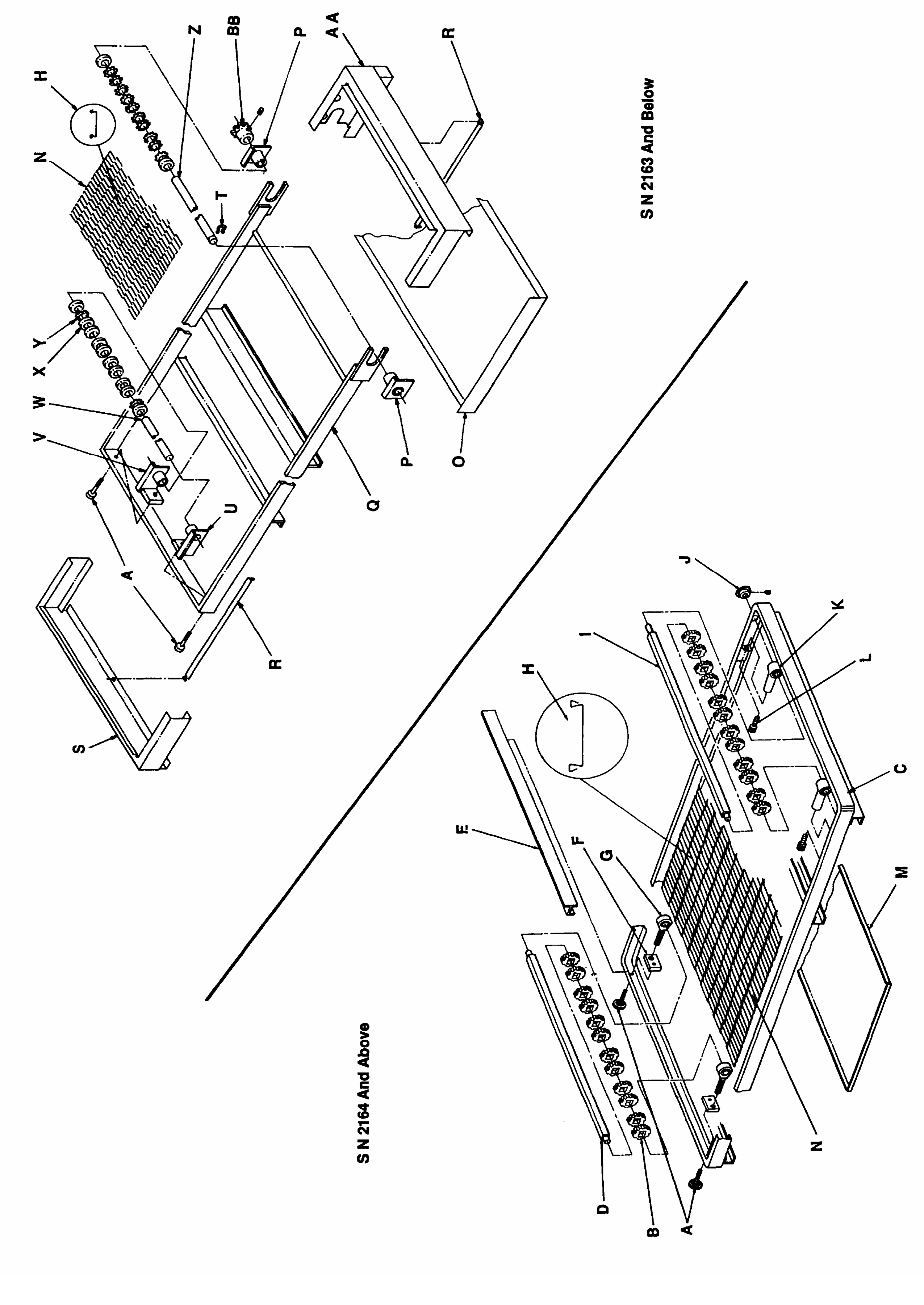
BLOW UP / CONVEYOR MOTOR ASSEMBLY S/N 4390 & ABOVE



PARTS / SERIES 1000 – CONVEYOR

LETTER	P/N	DESCRIPTION
A	369002	Tension Knob, Conveyor
B	369314	Roll, Conveyor-Notched
C	369835	Conveyor Frame Assy.
D	369312	Conveyor Shaft, Idler
E	369160	Conveyor Pan Stop
F	369641	Idle Bearing Bracket
G	369220	Idle Bearing
H	369005	Conveyor Belt Connecting Link
I	369237	Conveyor Drive Shaft
J	369161	Roller Chain Sprocket, S/N 2164-Q14973 (Gas)
		S/N 2164-Q19077 (Electric)
	369066	Drive Sprocket S/N Q14974 & Above (Gas)
		S/N Q19078 & above (Electric)
	369413	Drive Key
K	369219	Rod End, Female
L	369644	Screw 1/2-20 x 3/4
M	369206	Crumb Pan
N	369163	Conveyor Belt
	369362	Conveyor Belt by Foot
O	369143	Crumb Pan
P	369036	Drive Bearing Assy.
Q	N.L.A.	Conveyor Frame
		(Replace with 369117 Complete Conveyor Assy.)
R	369380	Conveyor Guard Strap
S	369060	L.H. Conveyor Guard Assy.
T	369037	Snap Ring
U	369034	L.H. Conveyor Idler Bearing Assy.
V	369035	R.H. Conveyor Idler Bearing Assy.
W	369042	Idler Shaft
X	369039	Blank Drive Gear
Y	369038	Notched Drive Gear
Z	369043	Drive Shaft
A A	369059	R.H. Conveyor Guard Assy.
B B	369040	Conveyor Sprocket (Uses 369042 Key

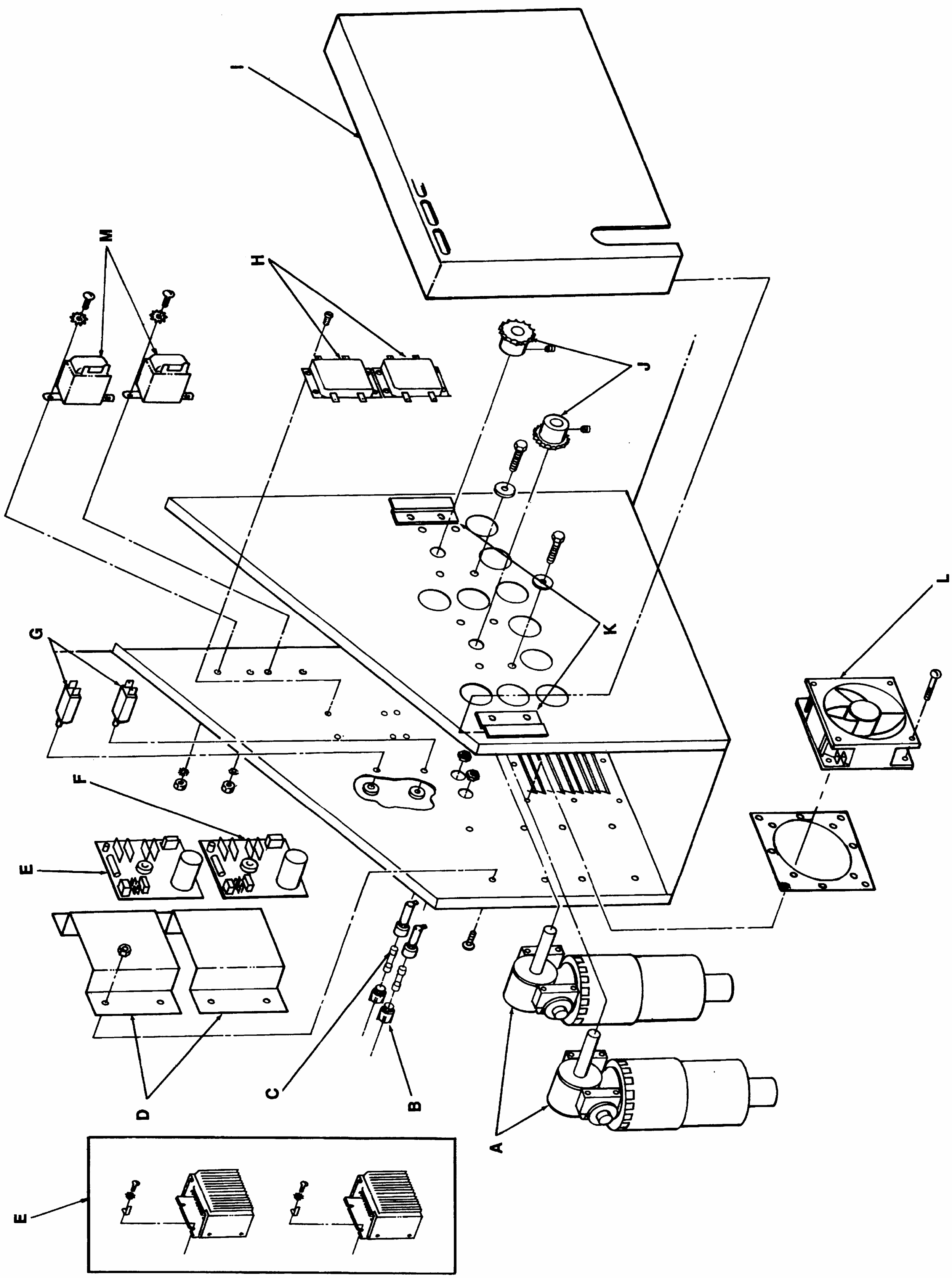
BLOW UP / SERIES 1000 CONVEYOR



PARTS / SERIES 1200 - CONVEYOR CONTROL

LETTER	P/N	DESCRIPTION
A		SEE PAGE 82
B	369012	Fuseholder
C	369013	Fuse, 3 Amp
D	369240	Hi Hat
E	369155	Conveyor Motor Control, "A" S/N Q4613 to Q14973
	369640	Conveyor Control (Stepper) S/N Q14974 & Above
	357028	Fuse, Non Delay, 1A 250V
	369201	Fuse, 4 Amp, 250V
F	369272	Conveyor Motor Control "B" S/N Q4613 to Q14973
	357028	Fuse, Non Delay, 1A 250V
	369201	Fuse, 4 Amp, 250V
G	369154	0.7 Amp Circuit Breaker
H	N. L.A.	
I	369665	Chain Guard
J	369289	Sprocket, 5/8" - S/N Q14791 & Below
	369242	Sprocket, 1/2" (Stepper) S/N Q14791 & Above
K	369696	Clip, Chain Guard
L	369124	Cooling Fan, Control Box
M	369605	Transformer (Stepper)

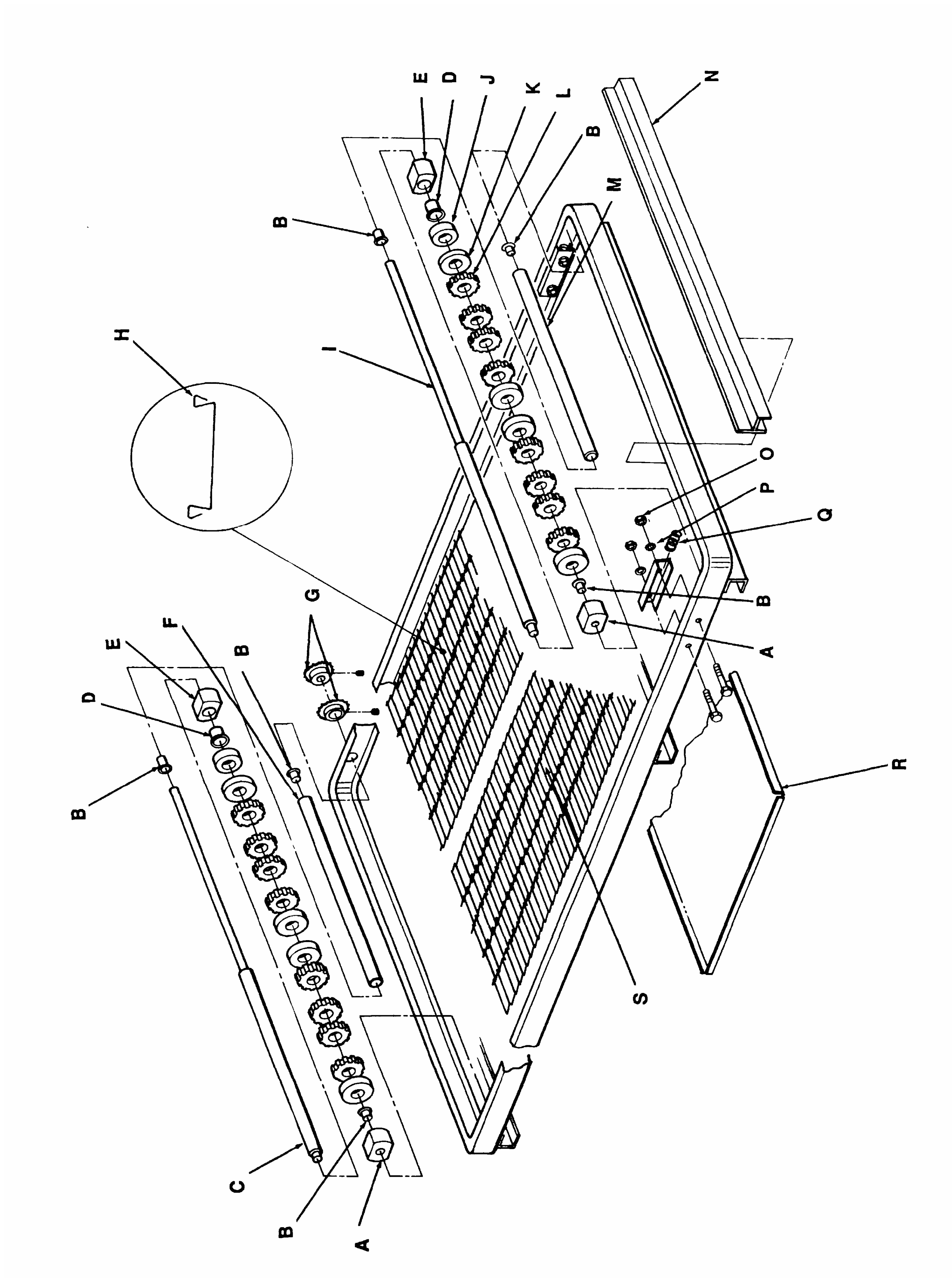
BLOW UP / SERIES 1200 – CONVEYOR CONTROL



PARTS / SERIES 1200 – CONVEYOR

LETTER	P/N	DESCRIPTION
A	369277	Retaining Block, Inner
B	369275	Flanged Bearing, .50 ID
C	369276	Inner Drive Shaft
D	369274	Flanged Bearing, .75 ID
E	369279	Retaining Block, Outer
F	369278	Outer Drive Shaft
G	369241	Sprocket 3/4" Bore
	369242	Sprocket 1/2" Bore
H	369005	Conveyor Belt Connecting Links
I	369280	Idler Shaft, Inner
J	369284	Collar Shaft Spacer
K	369039	Blank Drive Gear
L	369038	Roll, Conveyor, Notched
M	369281	Idler Shaft, Outer
N	369160	Conveyor Pan Stop
O	350238	Nut, 10-24
P	369697	Lockwasher, SS #10
Q	369282	Compression Spring
R	369206	Crumb Pan
S	369273	Complete Conveyor Belt
Not Shown	369249	Drive Chain, Long
Not Shown	369250	Drive Chain, Short
Not Shown	369817	Drive Chain, Long (Stepper Drive)
Not Shown	369818	Drive Chain, Short(Stepper Drive)

BLOW UP / SERIES 1200 – CONVEYOR



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